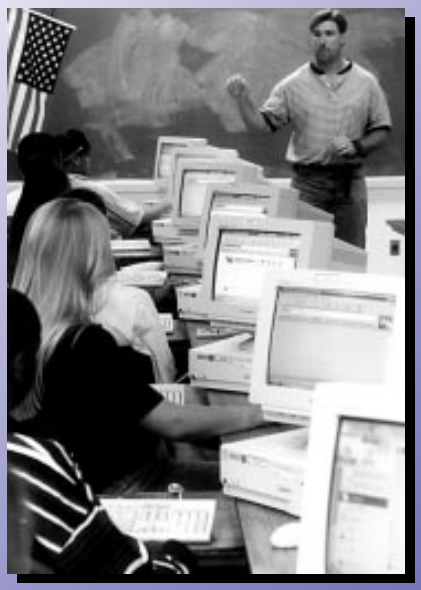

Integrating Academic and Vocational Education

A RESOURCE GUIDE

Hail to the skillful,
cunning hand!
Hail to the cultured
mind!
Contending for the
World's command,
Here let them be
combined.

Integrating Academic and Vocational Education

A RESOURCE GUIDE

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INTRODUCTION

The integration of academic and vocational education is a major element in the school-based learning component of School-to-Work. To integrate academic and vocational studies, educators and representatives of business, industry, and the community work together to design learning programs that incorporate applied methodologies, team-teaching, and interdisciplinary activities. Integrated curricula also offer instruction in "all aspects of an industry" to students in their chosen career majors.

This resource guide includes the following information on the integration of academic and vocational education:

- reprints of key articles and documents
- an annotated bibliographic list of
    1. materials for selecting and using strategies for successful integration
    2. implementation guides for bridging the gap between academic and vocational education, and
    3. curriculum materials for the classroom teacher
- a list of organizations that can provide other related information, resources, and technical assistance
- a list of newsletters that routinely cover related issues

Materials for inclusion in this bibliography were selected from a search of the ERIC (Educational Resources Information Center database on DIALOG), WWW (World Wide Web), and the Florida School-to-Work Clearinghouse databases.

For additional information, contact the Florida School-to-Work Clearinghouse, 251 Sliger Building, 2035 E. Dirac Drive, Tallahassee, FL 32310, (800) 428-1194 or (904) 644-5549.

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But I've Been Doing This for Years: Informal Integration of Vocational and Academic Education Pilot Test Report

MDS-870

But I've Been Doing This for Years: Informal Integration of Vocational and Academic Education Pilot Test Report

MDS-870

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Discrimination:	Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Therefore, the National Center for Research in Vocational Education project, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

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The authors gratefully acknowledge the many persons who contributed to the completion of this report. These include Illinois State Board of Education managers and consultants who nominated exemplary teachers in each vocational subject area, school administrators who allowed us access to their faculty and programs, and especially the teachers themselves who submitted to interviews and opened their programs up to us. Several faculty, staff, and graduate students in the Department of Vocational and Technical Education, College of Education, University of Illinois at Urbana-Champaign, also provided input into the study and the report.

EXECUTIVE SUMMARY

This pilot study represents the first phase of a two-year study of individual teachers who provide integrated instruction for their students, with the goal of uncovering genuinely innovative tips and techniques which may be emulated by others. The pilot study sought to identify individual teachers who recognized the advantages of integrating the vocational and academic aspects of their instruc-

tion prior to the influence of state or national initiatives such as Tech Prep. By examining these "early innovators," the project is seeking to locate and describe strategies that truly work and that lie outside of (or augment) the current body of knowledge on the subject. The instruments and procedures developed and refined in this pilot study will be used to collect data from a larger sample of teachers in several midwestern states during the second phase of the study.

The pilot study concentrated on the process of identifying the right subjects to study. A multiple-stage procedure was developed which involved (1) having state-level staff nominate exemplary vocational teachers and/or programs, (2) conducting telephone interviews with nominees to determine if they were "early" integrators along with their current level of integration, and (3) selecting a small number of subjects for further study based on telephone interview results. This identification procedure yielded three detailed interviews.

Data collection, analysis, and reporting procedures were piloted by conducting intensive on-site interviews with the three subjects in the late fall of 1993. The interview guides were developed by project staff and focused primarily on teaching methods used to achieve integration. Interviews were audiotaped, and the tapes were transcribed and content analyzed. Narrative reports were developed around the following organizers: (1) teacher background (with integration); (2) their overall view of integration (e.g., why it should be done, what its function is, perceived benefits); (3) how integration is achieved in their classrooms (and labs), (4) the level of support they have received and how they garnered support, and (5) their perceived evidence of the success of their efforts.

Two themes emerged via the analysis of interview data. One focuses on the adaptation of supervisory techniques used by a teacher through over twenty years of industry experience, the other on the ability and willingness to ferret out existing information from a variety of sources and adapt it for instructional use.

INTRODUCTION

In 1983, the National Commission on Excellence in Education (NCEE) produced a report, *A Nation at Risk*, which was very critical about the quality of education in American schools. Among the issues raised by the report was concern that schools no longer produced graduates who met the challenges of the changing workplace. Vocational education came under criticism for producing graduates who were trained for specific jobs that no longer existed. A common theme in the report, and other commentaries in support of it, was that schools must yield graduates who could adapt to the changing workplace and face the competitive challenge being posed by other nations. The vocational community reacted to the NCEE's report by producing their own report, *The Unfinished Agenda* (National Commission on Secondary Vocational Education [NCSVE], 1984), providing strong points in defense of vocational education with appropriate solutions. One of NCSVE's recommendations was to integrate vocational with academic education because the former provided an applied setting that would make learning more meaningful to students. The NCSVE report stated the following:

> What is really required today are programs and experiences that bridge the gap between the so-called "academic" and "vocational" courses. The theoretical and empirical bases as well as the practical and applicative aspects of academic courses and vocational courses must be made explicit and meaningful. (p. 14)

From a vocational education standpoint, the major initiative to come out of the reform movement was the integration of vocational and academic education. The primary aim of integration was to strengthen vocational education through applied academics to improve the reading, writing, and computational skills of noncollege-bound students. For college-bound students, vocational education would complement academic education by providing an applied environment that would make learning more realistic.

Several approaches have been used in implementing integration of vocational and academic education in secondary schools. Grubb, Davis, Lum, Plihal, and Morgaine (1991) used interview and observation techniques to identify the following eight "models" of integration:

1. The infusion of academic content into existing vocational courses by vocational teachers
2. The infusion of academic content into vocational courses by combinations of vocational and academic teachers
3. The use of vocational applications to illustrate concepts and principles within academic courses
4. The alignment and modification of the content of both the vocational and academic curricula
5. Independent senior-year projects which incorporate skills learned in vocational and academic coursework
6. Occupationally oriented academies, or schools-within-schools
7. Occupationally oriented high schools
8. Occupational clusters replacing traditional academic departments within a high school; a combination of occupational clusters and academic departments in a matrix structure

Roegge, Galloway, and Welge (1991) interviewed vocational teachers and observed classes in ten Illinois schools. They found a variety of individual and collaborative strategies being employed such as cross-teaching, consulting (i.e., providing expertise on content and/or applications to other teachers), student consulting (i.e., students providing assistance to other students), and various formal and informal "content alignment" strategies.

Schmidt, Finch, and Faulkner (1992) analyzed the results of over 100 interviews with school personnel to classify vocational and academic integration activities into six themes:

1. Cooperative efforts (vocational and academic teacher collaboration)
2. Curriculum strategies (building integrated curricula)
3. Instructional strategies (integrated instruction)
4. Administrative practices and procedures (supporting integration)
5. Student outcomes (changes resulting from integration)
6. Teacher outcomes (changes resulting from integration)

For several years, schools in the Southern Regional Education Board (SREB) consortium have employed and evaluated integration approaches involving the incorporation of academic content in vocational courses, administrative policies to encourage integration, applied instructional approaches, collaboration, and counseling (Bottoms, Presson, & Johnson, 1992).

The prevailing opinion appears to be that more complex and formal integration approaches have the best potential for creating and sustaining meaningful reform (Grubb et al., 1991). As practitioners seek to introduce integration strategies, they have often encountered resistance as well as frustration in attempting to implement this rather nebulous concept.

Statement of the Problem

Among vocational education practitioners, a common response to calls for integration is, "but I've been doing this for years." What do they mean by "this?" It has often been suspected that "this" means business as usual—an effort to find and justify integration in the status quo. But they may also be referring to an "infusion" strategy—that is, incorporating academic content into their vocational instruction (Grubb et al., 1991). The infusion strategy is believed to have limited capacity to stimulate broader reform and has, therefore, been largely passed over in recent integration efforts. There is no reason to doubt, however, that valuable insights into actually "integrating in the classroom" may be gained from those who practice infusion. Further, there is evidence to suggest that teachers often go beyond infusion and interact and collaborate with one another, on their own, to integrate vocational and academic instruction (Roegge et al., 1991). In search of large treasures, small individual gems are sometimes overlooked.

Purpose of the Study

The purpose of this pilot study (Phase I) was twofold. The primary purpose was to test and thereby refine instruments and procedures for use in a multistate study of informal, teacher-initiated integration to be conducted during the second year of the project (Phase II). In addition to testing instruments and procedures, data gathered from Illinois teachers would comprise the initial dataset for Phase II. Both phases of the study seek to examine individual teachers who have successfully integrated vocational and academic instruction on their own rather than as a part of a larger school, state, or national initiative.

This study is framed in previously cited description and classification of integration done by Grubb et al. (1991) and Schmidt et al. (1992). The study focused specifically on two elements of those earlier NCRVE works, namely the "infusion of academic content into vocational courses" model(s) identified in the Grubb study, and the "instructional strategies" theme identified in the Schmidt study. Within this framework, the objectives of the study follow:

- To develop criteria and definitions for identifying and selecting an appropriate sample, and use them to formulate sampling instruments and procedures.

- To refine qualitative data collection instruments and strategies.

- To refine methods for summarizing, analyzing, and presenting the data.
- To report initial results from Illinois sites.

METHODOLOGY

This pilot study tested methods and procedures for exploring teacher-initiated integration efforts, employing qualitative interview and observation methodologies designed to provide detailed descriptions of how integration is accomplished in classrooms. Patton (1990) identifies "clarifying a model or treatment" (p. 107) as an appropriate application of qualitative methodologies. This study examined the so-called infusion model of vocational and academic integration in detail.

Sample Identification

Finding the right people to interview is critical to a descriptive, qualitative study of this nature and was therefore a major focus of the pilot study. The following multiple-stage process for identifying the sample was developed:

- Staff from the Secondary Programs and Services Section, Illinois State Board of Education/ Department of Adult, Vocational and Technical Education were asked to identify what they considered to be the top ten secondary programs in the state in agriculture, business education, health occupations, home economics, and industrial education. A total of 49 teacher/program nominations were secured through consensus among the ISBE consultants in each of the occupational areas (a copy of the initial contact letter is in Appendix A). Though the study's purpose was mentioned in the letter, state staff were not asked to select teachers based on integration but, rather, on a perception of overall program quality.

- The teachers who were nominated via this process were then interviewed by telephone to determine the extent and type of vocational and academic integration they practice in their programs. The structured interviews were conducted using procedures and instruments similar to those used by Roegge et al. (1991). The process was as follows: (1) teachers were contacted by letter to inform them of their nomination and alert them to forthcoming telephone contact; (2) teachers were contacted by telephone to set up times for interviews (this sometimes took several calls); and (3) the telephone interviews were conducted, each lasting 10-15 minutes. These initial telephone interviews served two purposes: (1) to select the most appropriate teachers to participate in the in-depth interviews, and (2) to provide focus to the in-depth interviews (see Appendix B for the "Site Selection Guide"). Follow-up calls were made as necessary to clarify information gathered in the interviews.

- Results of the telephone interviews were examined by project staff and faculty from the Department of Vocational and Technical Education, University of Illinois at Urbana-Champaign. Based on this examination, two primary criteria were used to select sites for further examination. These were (1) the degree to which integration was instruction-based (as opposed to curriculum-based) and (2) the length of the time the teachers had been using integration in their teaching.

Three sites were selected for the pilot study based on the data obtained on the telephone interviews. The programs selected for examination in the pilot study were in the areas of technology education, home economics, and vocational agriculture.

Instrument Development

The focus of qualitative research is detailed or "thick" description. In this case, the aim is to describe what individual teachers do and how they do it in terms of integrating vocational and academic content via instructional techniques. For the pilot study, an instrument was developed which was semi-structured, focusing on major anticipated themes while allowing for these (or alternative themes) to emerge during the course of the interview. The on-site teacher interview instrument, therefore, was developed and structured very broadly around the following organizers: (1) nature (general description) of the integration activities; (2) focus (e.g., was integration being accomplished primarily through the teaching method, instructional materials, applications such as lab activities, work-based learning experiences, special projects, or a combination of the above); (3) the implementation of the integration strategy and its acceptance into the school culture; and (4) the evaluation of integrated learning. These guides were adapted from protocols used in previous studies (e.g., Grubb et al., 1991; Roegge et al., 1991).

The instrument was researcher designed and borrowed in style from an instrument developed by Schmidt et al. (1992). The draft was examined by faculty and graduate students in the Department of Vocational and Technical Education at the University of Illinois at Urbana-Champaign for relevance, consistency, and clarity of questions. The instrument contained open-ended questions that were expected to help in leading the discussions with teachers during the interview process (see Appendix C).

On-Site Interviews

The pilot study interviews were conducted during November of 1993. Though the intent was to follow the interview guides rather closely, it was discovered that a more unstructured approach succeeded in allowing the subjects to tell their stories from their own perspective. Though the aforementioned interview guides were used, the format remained largely unstructured, and the interviewers only referred to the guides if the interviewees failed to address specific points. The interviews were recorded on audiotape, averaging approximately three hours in length. Interviewer notes supplemented the tapes, and program documentation was also collected at the time of the site visits.

Content Analysis and Reporting

The audiocassettes from the site interviews were transcribed and typed out for content analysis. Narrative reports were written from the data collected in the interviews and through observations. When all narratives were completed, they were content-analyzed to identify any existing commonalties in nature, focus, implementation, acceptance, and evaluation methods.

RESULTS

The purpose of this pilot study was to develop and refine methods for exploring individual teacher initiatives regarding the implementation of classroom integration strategies. This purpose was accomplished by using instruments and procedures to interview a small sample of teachers in Illinois. The remainder of this section reports the findings of the pilot study.

Analysis of Telephone Interviews

A list of 49 teachers was obtained from the Illinois State Board of Education. Forty-six interviews were completed. Table 1 shows the summary of the results from the interviews.

Table 1
Summary of Results from Telephone Interviews with Illinois Teachers

Vocational Program	Number of Schools Contacted	Number of Interviews Held	Teacher-Initiated Integration	Tech Prep or Other Formal	0–2 years Integration Experience	3–4 years Integration Experience	5–10 years Integration Experience	>10 years Integration Experience
Agriculture	10	10	6	4	1	3	4	2
Business	10	10	7	2	–	3	3	4
Health	10	10	5	3	2	4	–	3
Home Economics	10	9	6	4	4	2	–	3
Industrial	9	7	3	4	1	2	2	1
Total	49	46	27	17	8	14	9	13

Twenty teachers indicated that their integration activities were self-initiated. However, it was observed that nearly all of the business teachers who integrated in their teaching did so because of the structure of their programs. For example, written and oral communication skills are an inherent part of job search skills instruction (e.g., application and résumé writing, interviewing). Computational skills are a necessary component of accounting. A typical response from a business instructor on why he or she initiated integration was that it was "just part of the coursework. . . ." This implied that the business education curriculum was inherently integrated and that no purposeful innovation (particularly one that centered on instruction) had taken place to initiate or improve integration.

Nearly half of the nominated teachers had been integrating for four years or less, mostly as part of Tech Prep or because of its influence. Seventeen teachers indicated that their programs were part of the Tech Prep initiative. Some teachers, however, indicated that even though their programs were now part of Tech Prep, they had been integrating vocational and academic content in their instruction prior to the emergence or influence of Tech Prep.

Thirteen teachers had more than ten years experience with vocational and academic integration, with one teacher claiming to have been integrating for twenty and another for twenty-four years respectively. Teachers cited various reasons for initiating integration in their instruction. There did not seem to be one universal reason for initiating integration.

The following are quoted examples of reasons given by teachers who had been using vocational and academic integration strategies for a long time. Shown in parentheses is the number of years the teacher had been integrating:

- "It just seemed to be the right thing to do." (9 years)
- "Agricultural science has always been this way." (34 years)
- "Just part of the coursework. . . ." (23 years)
- "Always felt education should be a total experience." (20 years)
- "It is important." (10 years)
- "Have to use biology and other topics in order to teach home economics." (29 years)
- ". . . important to real life, the class must have aspects of life in it. . . . Problem solving is important especially with math. Bring all topics together. Use analogies." (8 years)
- ". . . wanted to implement what they do in industry because I worked in industry for years. Very hands on, applications based." (10 years)

Teachers in business (and to a lesser extent in agriculture) seem to have been using integration in their instruction as a requirement of their courses. Agriculture teachers stated that using biology content is a necessary component of their instruction, while business teachers included math and communication as part of their instruction without considering this process as unique or as innovative teaching. However, in programs such as home economics, technology, and health occupations, teachers needed to make a deliberate effort to introduce academic subject content in their instruction. In these disciplines, skill components appear to have traditionally been taught separately.

Case Study Narratives

Of the three interviews conducted, two are reported here. They are labeled "Real-World Experience" and "Whatever It Takes," respectively, to denote the central theme embodied by each. The two are reported in narrative style and include the following sections: Background, Overall View of Integration, How Integration Was Accomplished, Support for Integration, Evidence of Success, and Summary.

Case 1: Real-World Experience

Background

The setting was most unremarkable. The industrial education program was housed on the ground floor of an older, multiple-story school building on the main thoroughfare through the town (of about 8,500 citizens). Upon entering the room, the immediate impression was one of a sense of disorganization. Tables were arranged in a loose circle in the center of the room, and the walls were bordered

with cabinets and shelves piled high with reference manuals and equipment in various states of disassembly. An adjoining room was overflowing with used electronic components salvaged by the teacher. There was a quiet buzz of activity as students moved about working on projects. The atmosphere was very informal and seemingly unstructured.

The primary focus of this case was the teacher, who for the sake of anonymity is referred to as Paul. Paul was a unique individual who appeared to have "done it all" in his life. He spent twenty years in private industry as an electrician, aerospace technician, electrical contractor, surveyor, and business consultant. He has been both an employer and an employee. In the early 1980s, he began teaching technical courses part-time at a nearby state university. While he was teaching, he also earned a Master's degree in Vocational/Technical Education and applied for a position as a teacher of industrial education at the local high school, a position which he held for fifteen years. He also continued to operate an independent consulting business, and on weekends he taught other secondary teachers how to implement and use the Principles of Technology course. Paul was addressed as "Chief" by his students.

Overall View of Integration

Paul saw nothing special, new, or unusual about integration or his own involvement with it. To him it was a natural outgrowth of the subject matter. Electronics requires mastery of certain aspects of mathematics. It also requires knowledge of various laws and theorems from physics and chemistry. When viewed through the lens of his vast work experience, these "integrated" components were actually a natural part of the course content. Paul also taught Principles of Technology, which is a purposefully integrated physics course, but again, he did not view the application of physics principles as anything worthy of special attention--it was just the proper way to learn the principles. From his own experiences in industry, Paul was very much a proponent of "learning by doing." He claimed that much of what he learned as an electrical contractor was learned via on-the-job experience. Also, not having spent his formative career years within the academic culture, he did not hold a traditionalist's view of "academic" vs. "vocational" tracks (nor did he speak in educational jargon, which was refreshing). He was focused on what he believed students needed to succeed in the workplace, and that is what he sought to provide for in his classes. It is this researcher's opinion that this would hold true regardless of his subject matter specialty.

How Integration Was Accomplished

The integration that occurred in Paul's program stemmed from the subject matter and, more importantly, the teaching approach which he employed. He epitomized the "teacher-as-facilitator" genre because, as he said during the interview, "I've run a business for ten years, and I know what it is to get production." In his view, a teacher "gets production" by allowing (or forcing) the students to be active participants in the teaching/learning process.

His electronics course was totally project-oriented. Students were assigned to project teams of two to five persons. The basic instructional format which was used faithfully is as follows: (1) project pretest, (2) review and recording of project learning objectives, (3) guided team research of project learning objectives, (4) mini-lecture and recording of lecture notes, (5) team consensus on proposed

solutions to project questions, (6) team lab work to determine actual answers to project questions, (7) project posttest for group grade, and (8) project examination for individual grade. The focal point for all class activities was the Daily Work Journal. The impetus for the journal came, not surprisingly, from Paul's business experience. As an electrical contractor, he supervised up to three different crews on different jobs simultaneously. By requiring each crew to keep a journal, and keeping one himself, he was better able to coordinate supply needs, crew schedules, and so on. The student journals themselves were nothing more than a common composition book, which were, according to Paul, "$1.17 at Wal-Mart, if you buy 100 of them they give you a reduction in price, and they always have engineering conversions in the back, everything they need. . . ." All student work was recorded in a journal, following very specific guidelines developed and copyrighted by Paul. Students were required to write at least three complete statements of conclusion at the completion of each project.

The basic format outlined above was printed on a display board on the wall of the classroom. This format, along with the prescribed guidelines for recording journal information, was the first thing the students learned in Paul's classes. Steps 1 and 2 were completed by the entire class together. From that point, each team was on its own until the project was completed. When a team had completed its independent research of the project objectives, Paul provided feedback and delivered mini-lectures of pertinent content. He opined that it was easier to lecture directly, across-the-table, to a small group rather than to an entire class. Teams were required to complete eight projects during the electronics course. If a team finished early, the students were able to work on "special projects" for the class, school, or community. For example, one student had installed conduit and wired additional lighting for the school auditorium; another had built a computer control for a neighborhood light display.

A key component of Paul's instructional strategy was organizing all student activities to be conducted in teams. Whether his students were working in the laboratory or making presentations about their program it was always done in teams. Paul said of this strategy, "Everything I do is teams. . . . Two, three, four, or five is a team and then I have to work with these teams everyday to see how well they mesh together." Working in teams was an important way to improve interpersonal skills among the students. It was also a reflection of the modern workplace where problem solving in teams is considered to be more effective. Inevitably, when people work together differences are bound to occur. Paul explained how he builds student teams and how conflicts are handled:

> I pick them at random then I see how it works . . . I will force for two or three weeks, I'll say look, if you can't get along with any of them, what are you going to do on the job . . . If I got a problem child, then I've got to try them with another team.

While the primary source of student motivation was the activity-oriented approach, two other motivational tools were used by Paul. One was the portfolio, which each student was required to keep. Though portfolio evaluation is in vogue right now, Paul claimed that his motivation for requiring them was that he himself kept one for all of his twenty years of business experience. Ring binders and plastic page jackets were provided through Tech Prep funding. In their portfolios, students accumulated information related to career planning, their curriculum/course of study, results of student assessments, and student-produced materials. One portfolio which was reviewed also contained letters to the student from a number of colleges expressing interest in having the student apply.

The other motivational tool which doubled as a public relations/marketing strategy was public presentations. Paul had been approached by a number of professional organizations, agencies, conferences, media outlets, and individual schools to make presentations about the program. Rather than making the presentations himself, he established a "traveling team" of students. These students (usually in small groups) presented and demonstrated the project work they had completed in class, their portfolios, or journals. According to Paul

> . . . it's ridiculous for me to go to a workshop and stand up there and say "now this is what I do, what I do, what I do." The kids take portfolios and journals and labs and they tell them what they do. They don't want to hear it from me, I'm boring.

Students worked very hard for the opportunity to be on the traveling team. They were chosen based primarily on their work attitude, and the teams consisted of students of all ability levels. Paul took the researchers to the self-contained behavioral disordered room and introduced us to a behavioral-disordered student who had made a presentation the previous evening. The student spoke very excitedly about the presentation. It was obvious that he had never had this kind of opportunity before.

Paul's method of involving his students with everyday activities was evident when this research team visited with him. The interview was conducted right in the classroom with all the clutter of students working on their projects in the background. From time to time Paul would shout out instructions to groups of students. When an interview question touched on a particular part of his teaching, rather than tell you what he does, he would bring out students to respond by showing you their journals, portfolios, or describing their experiences directly.

Support for Integration

The support that Paul has received for his program resulted largely from the fact that, from early on, he has been active and even aggressive in seeking publicity and support. After he implemented his project-oriented teaching approach, he was eager for others to see it. Administrators were hesitant to endorse his techniques at first because they were so different from the usual "stand-and-deliver" lecture approach. The academic teachers "just thought he was standing around doing nothing all day." Their approval was won partly through persistence—"I kept asking the principal to come down and said we want to give you a one-hour presentation on what we do. He got tired of coming down"—and partly through success. Once his methodology was established and he felt confidence in it, Paul began encouraging his students to enter their projects in school science fairs and competitions, and they began winning. This, he reported, validated his approach and got others to sit up and take notice. He continued to work almost daily at developing relationships with academic teachers. He succeeded in convincing an English teacher to implement applied communications. He also convinced the biology teacher to try applied biology/chemistry. The teacher subsequently reported that he was going to use applied teaching in all of his courses.

Another event which greatly influenced acceptance and support, and which also occurred because of the teaching approach and its success, was the awarding of a Principles of Technology pilot site grant. This brought the program to the attention of the entire community. Since that time, Paul has

taken every opportunity to publicize his program through print and television outlets, as well as through live presentations (discussed earlier).

Evidence of Success

While no “hard” evidence was presented of increased achievement levels or the like, several examples point to an approach that was succeeding. Among these were the following: virtually no discipline problems, expanding enrollment, success in competitions, requests of others to visit the program, identification by the state as an exemplary program, requests to make presentations, requests to teach other teachers in applications-based methods, the inquiry letters from colleges in one student's portfolio, and the respect of peers and administration.

Summary

The key to success in this case appears to be the extent and—perhaps more importantly—the nature of Paul's work experience. Twenty years in the workplace was certainly beyond the norm for high school teachers, regardless of their field. What was striking, however, was that a large portion of the work experience was supervisory and entrepreneurial in nature. This raises further issues. Because of his entrepreneurial nature, was Paul better able to visualize how he wanted his class to perform and point them in the appropriate direction? Was he more willing to go out on a limb with his instructional technique, either in the hope of finding something better or something to market? Was he better at facilitating learning because of his supervisory experience? In other words, does the limited degree of control a supervisor exercises over his or her workers better prepare them to be facilitators? One of the issues always raised in regard to applications-based instruction is that teachers are resistant to relinquish control over their students. Paul appeared to regard the degree of control he exercised over his class as sufficient and certainly tighter than what he experienced in the workplace, even though, by traditional education standards, it seemed very loose indeed. Paul seemed to have empowered students in his class to take responsibility for the learning.

Case 2: Whatever It Takes

Background

Case 2 was a two-teacher home economics program in a school of approximately 650 students in a town of 10,000. Again, the physical setting indicated nothing out of the ordinary. In contrast to Paul’s classroom, this one had orderly rows of tables and chairs—a very traditional arrangement. As the interview took place after school hours, student activity was not observed but was discussed and is examined later in this report.

Both of the home economics teachers were interviewed simultaneously. This turned out to be most appropriate because the two appeared to work in concert most of the time. This case study, however, does not focus on the private sector experience of the teachers, but on the way they complemented one another and on their resourcefulness in gathering, developing, and/or adapting instructional materials and other resources to make their teaching more integrated and effective. For the sake of anonymity, they are referred to as Cheryl and Diane. Cheryl was the lead teacher in the department,

with twenty years of experience. Diane, who had fourteen years of experience, had been a free-lance artist and an art teacher before becoming a home economics teacher.

Overall View of Integration

Like Paul, Cheryl and Diane viewed vocational and academic integration as a necessary function of their particular subject area and had been consciously integrating their instruction for many years. Unlike Paul, they both were more cognizant of and active in the broader "integration movement." It also appeared that they had, in the past, held to a more traditional educator's view of separate "vocational" and "academic" curricula and were more content-driven. They sought out and received grants for integrated curriculum development, and had attended several state and national conferences, both as members of the audience and as presenters. In fact, it was this participation which appeared to have been their initial impetus for finding and gathering curriculum materials related to integration and adapting them for inclusion into their program. Through this process they also found that some desired topics had not been covered; therefore, they began to develop their own curriculum materials. Therein lays the major difference between Cheryl and Diane's integration and Paul's. While Paul's was more tied to instructional methodology, Cheryl and Diane's was more a matter of curriculum development.

Cheryl and Diane began integrating to meet a specific need—lack of ability by students to write coherently. Both were distressed by the spelling, grammar, and sentence structure they were seeing in written work, so they began to emphasize these skills more in their curricula. Some of their concerns with weaknesses in their students came through contact with employers, something both teachers viewed as important.

How Integration Was Accomplished

Cheryl and Diane emphasized the curricular aspects of integration as opposed to teaching methods, particularly the development of integrated curricula. Both women emphasized the importance of finding high-quality "canned" materials and using them with as little modification as possible, due to the constraint of time. As Cheryl put it, "High school education does not allow think time. Four minutes between classes, we both are teaching six different preps a day . . ." This lack of "think time" was what led them to begin writing for small curriculum development grants. The grants allowed the district to buy some of their time so that they were free to "think" and develop integrated materials of their own.

Due to the curricular emphasis, Cheryl and Diane's integration seemed more purposeful and straightforward, and perhaps a bit less natural, than Paul's. The infusion of academics into various topics in the food science and marketing areas was made plain to the students, who were told that they were performing a certain mathematical operation (e.g., a mathematical operation that they must be able to master in order to calculate nutrient content). The food science course had been developed to the point that students received science credit for it and could use it as a prerequisite for Biology 2 (instead of Biology 1). It was interesting to note, however, that not many students chose this option. Most of the students who took the food science course followed a home economics sequence, while "college prep" students opted for Biology 1.

Cheryl had recently begun to cross-teach certain units with the biology teacher in the nutrition area. They had coordinated their instructional schedules so that complementary topics occurred more or less simultaneously. Then they exchanged classes to do "short lectures" on specific topics. For example, the biology teacher lectured both classes on the structure and function of lipids and triglycerides, then Cheryl taught them about fat content in the diet.

Another approach which was used frequently was simulation. Teams of students set up companies which developed and marketed a product. The teams developed business plans and product ideas, and then made formal marketing presentations to school administrators seeking official permission to carry on with their plan. In another scenario, students were teamed, placed on a "desert island," and given a certain number of days to develop an economy. In both instances, students were totally responsible for both the learning process and the outcomes. Students learned problem-solving, interpersonal, and communication skills.

In addition to keeping up with current developments in the broader integration movement, both teachers had made a practice of keeping in regular contact with local employers. These contacts served several purposes such as recruiting contacts for work-based learning sites and guest speakers and building political support for the program. The major purpose related to integration was to elucidate from employers what skills were needed to perform jobs in their businesses.

Support for Integration

Both Cheryl and Diane reported that the school administration was very supportive of their activities. They reported that when they had reached out to other teachers to pursue collaborative integration efforts, they had met with mixed reactions. Cheryl and Diane were persistent, however, and both reported very positive working relationships with and reactions from fellow teachers, once the ice had been broken. It appears that the key ingredients here were persistence along with a focused intent to do what was best for the students whether or not it had popular support. Also, their willingness to compete for grants and their subsequent success in winning them had given them added incentive by providing much needed "think time" and had also helped produce positive publicity for their programs and the school.

An important point, however, was that Cheryl and Diane would have done these same things regardless of whether or not theyreceived any support at all. They both gave the very strong impression that once they locked onto something which they felt was good for students, they went after it full speed, with or without support. While they appreciated support, they did not require it to carry on, nor were they daunted in the least by the lack of it.

Evidence of Success

Again, the evidence was of a rather squishy nature and seemed to deal more with students' enthusiasm and motivation to learn rather than achievement in any specific area. Diane reported that students responded enthusiastically to "being in charge" during the simulations. Their approach seemed to be popular with students, as both were teaching full class loads in a school of less than 700 students.

Summary

It was reported earlier that the administration was supportive of Cheryl and Diane's efforts to integrate. But why wouldn't they be? These two teachers had taken it upon themselves to provide the very best for their students, whatever it takes. They had, of their own volition, upgraded themselves professionally through extensive reading, inservice, contact with business and industry, contact with other teachers, and exhaustive search and review of curricular materials. They were secure and flexible enough to go outside of their own discipline if the need called for it. They had spent a considerable amount of their own money to purchase materials when the funds were not available. They had not hesitated to reach out to colleagues whenever they felt that collaboration would be beneficial to their students. In short, they appeared to embody the label, "consummate professional."

IMPLICATIONS

The primary purpose of this pilot study was to test and thereby refine instruments and procedures for use in a multistate study of informal, teacher-initiated vocational and academic integration to be conducted during the second year of the project. In addition to testing instruments and procedures, data gathered from Illinois teachers would comprise the initial dataset for the larger study. The topic of integration has been studied rather extensively in recent years, though the focus has typically been on schoolwide, statewide, or national initiatives. This study, on the other hand, sought to ferret out self-developed initiatives which otherwise go unnoticed beyond the walls of the individual classroom. To do so required careful identification of the subjects to be studied, thus the intent and purpose of this pilot study.

Though intensive and time-consuming, the multiple-stage process used to identify the pilot sites proved an effective means for identifying the subjects. Personnel from the Illinois State Board of Education responded promptly to the request to identify exemplary programs and/or teachers in each vocational subject area, providing names, addresses, and telephone numbers of the schools/programs and individuals. The telephone interviews with the nominees were very time-consuming, often requiring two or more calls to set up and complete the interviews. All respondents, however, were receptive to the intent of the study and unfailingly cordial and thorough in the interviews.

As a result of the interviews, the telephone interview instrument will be modified slightly for the larger study. As a result of efforts to gather as much information as possible upon which to base the decision whether or not to examine the teacher more closely, it was found that the instrument lacked sufficient focus. After analyzing the data from the interviews, it was decided that selection for further study would be based primarily on the length of the teacher's tenure and the number of years she or he had been integrating, along with the nature of the integration. Several extraneous items were subsequently removed from the final telephone interview instrument. For the expanded study, and for future studies of this nature, it is highly recommended that sample selection interview efforts be tightly focused on the specific variable(s) of concern.

Another area which was solidified based on the pilot test was the degree of structure of the on-site interviews. It was originally planned for the interviews to be highly structured, but it was decided

prior to the actual interviews to audiotape the interviews as a safeguard against missing any important information. This decision proved fortuitous. The interviewees, with minimal prompting or probing, were very expansive in their descriptions of their backgrounds and experiences with integration. Much of the flavor of the results would have been lost in a more structured setting. Thus, it was decided to audiotape all interviews, transcribe the tapes, and perform content analysis on the transcripts.

The initial analysis of the tape transcripts was done by hand according to preset organizers. Due to the time and difficulty encountered, a computerized analysis tool is being examined for use in the larger study. Also, the organizers were modified slightly based on the results of the interviews.

In anticipation of the expanded study, the findings provide useful direction. Based on the findings of this study, future research in this area should focus on teaching methodologies used to foster integration. Every attempt should be made to locate and examine individuals like Paul in Case 1. The approaches and activities he employed to accomplish integration also facilitated problem-solving and teaming abilities in his students. His classroom was truly "different" in many respects and reflected much of the current writing on application-based instruction and integration methods. It is these types of experiences which can contribute more substantively to practice. Another reason for increasing the focus of the selection process is Case 3, which was not reported. Though the telephone interview gave this program the appearance of being innovative, the on-site interview revealed that, while it was a solid program, essentially nothing remotely extraordinary was happening in terms of integration or innovative instruction. This again emphasizes the importance of focusing the selection specifically on a few components or variables.

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APPENDIX A:
LETTER TO ILLINOIS STATE BOARD OF EDUCATION

February 24, 1993

Kathleen Nicholson-Tosh, Manager
Secondary Programs and Services
Department of Adult, Vocational and Technical Education
Illinois State Board of Education
100 North First Street
Springfield, IL 62777

Dear Ms. Nicholson-Tosh:

The National Center for Research in Vocational Education has funded a research project, under my direction, to examine"informal" integration of vocational and academic education by secondary school teachers. The intent of the study is to identify and describe classroom techniques used by vocational teachers to incorporate academic content into their teaching. The study is currently being piloted in Illinois and will encompass several midwestern states.

I write to ask your assistance in identifying pilot sites for us to study in Illinois. Could you and/or appropriate staff members identify what you consider to be the top 10 programs in Illinois in each of the areas of Agriculture/Horticulture, Home Economics, Health Occupations, Business Education, and Industrial/Technology Education? We will then conduct telephone interviews with teachers in your recommended programs, and eventually select 2–3 teachers for in-depth on-site interviews. The only caveat I would make at this time is to emphasize that we are looking for informal integration. In other words, I am seeking teachers who integrate their instruction of their own volition and not as part of a larger requirement or project such as a Tech Prep initiative.

Either I or a member of my staff will follow up with you by telephone soon in order to provide any clarification you may require and/or listen to any suggestions you might have. I regret having to intrude on your already busy schedule, but would greatly appreciate your assistance.

Thank you very much for your attention.

Best regards,
Chris A. Roegge
Assistant Professor and Project Director

APPENDIX B:
SITE SELECTION INTERVIEW GUIDE

NCRVE Integration Project
Site Selection Interview Guide

Name of Instructor:

Name of School:

Address & Telephone:

Date Contacted:

Introduction:

Hello, my name is _____ and I am calling on behalf of Professor Chris Roegge of the University of Illinois. You recently received a letter from the Illinois State Board of Education explaining the research that Professor Roegge is conducting for the National Center for Research in Vocational Education, and that your program had been nominated as one of the ten best in Illinois. I would like to take about ten minutes of your time to ask you for some more information on how you integrate vocational and academic instruction.

We are interested in learning how teachers combine vocational and academic content within their teaching. For example, a Home Economics or Agriculture teacher may blend biology content into their lessons. We are particularly interested in teachers who do this informally, that is, in the course of their normal teaching rather than as part of a Tech Prep program or any other formal activity.

1. Do you currently do anything like I have just described?

1a. If so, could you give me a brief description or example?

2. What are some examples of “academic” topics which you include in your instruction?

3. Why did you choose to integrate your instruction?

4. How long have you been integrating your instruction?

5. What types of instructional materials do you use (commercial vs. self-developed)? If they use self-developed materials, request an example.

6. Have you received any recognition for your integrated teaching?

7. Who else (if anyone) in your school is doing anything similar to this?

8. What differences have your use of these integrated methods made in your students?

Additional Comments:

Initial Impressions:

APPENDIX C:
ON-SITE INTERVIEW GUIDE

Vocational and Academic Integration
On-Site Interview Guide

1. Date & Time:

2. Vocational Program:

3. Interviewee Name:

4. School Name & Location:

5. Interviewer:

Directions

Mr./Mrs./Dr. _____ , the purpose of this research project is to study teachers who have successfully integrated vocational and academic subject matter in their own classes. Much has been made of more complex integration projects and activities, but we feel that many worthwhile individual integration activities have been overlooked. That is why we are here. One of the major reasons you were chosen for this interview is that you have indicated that you have been “integrating” in your teaching for ____ years. This obviously predates the "integration movement," therefore, we view you as a pioneer in this area.

Above all else, we want you to speak your mind freely and without reservation. With that in mind, I would like to assure that your responses will be kept confidential. Would you mind if we recorded the interview?

With your permission, I'll turn on the recorder now.

First of all, I will ask you some general questions about vocational/academic integration:

6. How aware are you of the so-called "integration movement?" Do you keep up with the current writing on the subject? Do you consider yourself a part of this "movement"?

7. What is your overall opinion of integration? Do you see it as good or bad? What potential benefit does it have for (you/your students/your program/vocational education in general)? What major problems do you see with it?

8. How important is integration to instruction in your discipline? How much integration do you feel is necessary in your discipline?

Briefly summarize respondent comments to this point.

Now, let's talk more specifically about your own experience with integration.

9. Why have you attempted to integrate your courses? Can you recall any specific person, event, or decision that initiated your integration?

10. Specifically, how do you integrate your own classes? (prompt for teaching materials used, projects, and teaching methodology: *What, Why, and How*)

Collect any materials available.

11. How do others impact on the way you integrate? How dependent are you on others to facilitate your integration work?

    a. administrators

    b. other teachers

    c. students

12. How has the integration movement affected what you do (e.g., recognition, acceptance, invitations to inform others, and so on)?

13. What difficulties have you encountered along the way?

14. How well has your integration process worked? Can you provide examples of specific student successes as an outcome of your integration process?

15. Right now, what do you most need to help you succeed with integration?

16. Do you have anything else you would like to tell us?

Thank you very much. We would like to confirm some information about your background and teaching experience.

17. Teaching Experience: _____ years

18. Administration: _____ years

19. Work Experience in Teaching Area: _____ years

20. Education (highest qualification):

Many thanks for finding the time to talk to us. The information you have provided will greatly assist in our understanding of teacher-initiated programs that successfully integrate vocational and academic subject matter.

We have enjoyed talking with you.

★RESOURCE★
BULLETIN

APRIL 1996

Curriculum Integration in School-to-Work Systems

When most people hear the word "curriculum," they think of school classrooms where students acquire learning through a standardized course of study consisting of readings, lectures, written assignments, and perhaps some discussion. The School-to-Work Opportunities Act broadens the meaning of curriculum by calling for *integrated learning* organized into coherent sequences around broadly conceived career majors. *Work experience,* as well as academic and occupational study, is an assumed element of the integrated school-to-work curriculum.

In fact, the movement to integrate curricula in school-to-work systems is driven by the recognition that neither academic nor occupational education alone provides all students with the skills—problem-solving, reasoning, interactive learning—necessary for further education and for high-wage employment. Integrated learning also restores meaning and relevance to the student's experience of schooling, transforming what in too many high schools is a disjointed series of courses into a meaningfully integrated, experientially grounded education that continually demonstrates to students how education applies to real life. Integrated learning is also a teaching strategy that more closely matches human cognition than traditional high school class work. Cognitive research shows that students whose education makes them the passive recipients of education are usually less able to integrate and to apply what they learn in the classroom to other settings.

Together, educators, employers, and labor unions have implemented a variety of strategies for curriculum integration. This bulletin describes promising strategies for developing integrated curricula and identifies publications and organizations that can provide additional information.

Collaborative Planning. The development of integrated curricula requires collaborative planning among school administrators, academic and occupational teachers, employers, and labor unions. A number of state and local school systems have organized curriculum councils that bring together stakeholders to identify options for integrating classroom instruction with work-based learning. School-to-work partnership meetings also provide opportunities for building these connections.

School administrators facilitate the development of integrated curricula by decentralizing management and adopting decision-making models that promote interaction among teachers across disciplines. Administrators can also reconfigure schools into smaller learning communities (e.g., schools within schools) and encourage flexible scheduling to create new opportunities for students to apply academic and occupational learning in work settings. Providing teachers with time for

professional development, as well as time to work together, also supports the development of integrated curricula.

Collaboration among teachers is essential. Two or more teachers from different disciplines can work together to coordinate their class instruction, develop materials, link academic and occupational skills, and develop alternative instructional strategies. Teacher collaboration often takes place in curriculum teams formed around an occupational theme. Teachers need the opportunity to examine, experiment, and evaluate alternative approaches. A number of school systems give teachers an extra preparation period or time in the summer to work with employers and labor unions to develop curricula that integrate academic with work-based learning. Through internships in work places, teachers acquire experiences that help them apply industry-related skills and expectations to their classroom instruction.

Employers and labor unions also play key roles in developing integrated curricula. They enhance curriculum development by providing examples of how concepts learned in the classroom are applied in the workplace. Structured work-based learning enhances school-based instruction by giving students opportunities to apply academic concepts and strengthen the occupational skills necessary for success in the workplace. The development of skills standards gives employers and labor unions another avenue for helping educators identify what particular industries expect their workers to know and to be able to do.

Approaches to Curriculum Integration. Developers of integrated curriculum will find a great variety of approaches and models, ranging from the relatively simple to the more complex--in which the entire school is restructured. Jobs for the Future, in its Toolkit for local programs, offers three examples of integrated learning:

- *Coordinated curriculum* realigns course work so that instructors in different disciplines teach related topics concurrently, using occupational themes as the organizing principle for integrating academic lessons, occupational study, and workplace experience.

- *Project-based learning* engages teachers and students, in collaboration, to create projects organized around an occupational or on-the-job issue, requiring students to apply what they have learned both in the workplace and in school to address practical problems.

- *Thematic curriculum* eliminates the traditional distinctions between disciplines, instead organizing learning around questions or problems within the school-to-work program's occupational theme, which students then address from the perspectives acquired from both academic (history, science, and so forth) and workplace learning.

W. Norton Grubb and other researchers at the National Center for Research in Vocational Education (NCRVE) have identified several models of curriculum integration:

- *Making academic course work more relevant to work* is the most common approach to curriculum integration, due to time and resource constraints and the availability of "off the shelf" applied curriculum materials.

- *Incorporation of academic content into occupational courses* is an inexpensive mechanism for reinforcing students' acquisition of essential skills and knowledge.

- *Project-based instructional strategies* encourage students to be active participants in the learning process by synthesizing and applying subject-specific knowledge and skills to actual problems and situations.

- *Curriculum alignment* links instruction in one of two ways: *horizontal alignment* occurs when teachers within a grade level coordinate instruction across disciplines, and *vertical alignment* occurs when learning is connected across grades in order to build cumulative, comprehensive, increasingly complex sequences of learning experiences.

- *Career pathways* offer students access to a range of career options through integrated programs of instruction and work-based learning tied to their academic and occupational interests. Career pathways offer a more comprehensive approach to curriculum integration and often encompass several of the preceding strategies.

- *Occupational high schools and some magnet schools* have made curriculum integration the foundation for school-wide restructuring. Schools that are occupation-oriented often have access to additional resources for linking academic instruction with workplace applications--resources such as equipment, specialized curricular materials, industry advisory boards, and an established network of work-based learning opportunities.

- *Career Academies (e.g., schools within schools)* offer many of the advantages of occupational and magnet schools, yet usually operate on a smaller scale. The typical career academy, which has a team of academic and occupational teachers working with the same students for two or three years, offers a wealth of opportunities for curriculum integration, including work-based learning.

Whatever combination of strategies a school-to-work system adopts, the school-to-work curriculum by definition must synthesize academic and occupational study with work-based learning and work experience.

Using Outside Curriculum Sources. Educators and employers who want additional information about integrated curricula or samples of such curricula can turn to a number of national organizations. The National Network for Curriculum Coordination in Vocational and Technical Education collects and disseminates information about innovative strategies, practices, and curricula. Organizations such as the Center for Occupational Research and Development (CORD) and The Network, Inc. have developed integrated curriculum packages explicitly for use in school-to-work systems. These packages are often used as starting points for curriculum integration efforts that incorporate the unique ideas and resources available in a particular school, community, or state.

Effective Practices

The Southern Regional Education Board (SREB) has developed eighteen *High Schools That Work* sites that are serving as "advanced integration models." To develop integrated curricula, each site establishes a team of academic and occupational teachers and administrators. Each site also designates a coordinator to provide leadership, represent the team, and complete team reports. The teams have at least ten hours a month to plan interdisciplinary learning activities. Each team also participates in a one-week summer curriculum development workshop sponsored by SREB and completes a second week of summer curriculum planning at the school. Team members can also attend SREB-sponsored fall and spring workshops and sharing sessions. At these meetings, teachers share activities, plans, and lessons learned.

Many *High Schools That Work* sites use a project approach to curriculum integration. The Trigg County High School in Cadiz, Kentucky, has developed a project in which students design a competitive proposal for construction of a company's corporate headquarters. Using the budget, location, and company profile, students develop the proposal from start to finish. Student activities include determination of building specifications based on location and company profile, a title search to ensure that property is available for construction, preparation of working drawings, an environmental impact study, writing the proposal, and presentation of the proposal to a judging committee. The project incorporates a variety of disciplines: English, in the writing and presentation; science, in conducting the environmental impact study; social studies, in studying the corporation and its requirements; business, in conducting a title search; and technology, in developing floor plans, elevations, schedules, and models. For more information, contact Brenda McKinney, Trigg County High School, 202 Main Street, Cadiz, Kentucky. (502) 522-2215

At **Roosevelt Renaissance High School** in Portland, Oregon, career pathway teams created four-year curricula for each of six distinct pathways. These teams continue to work on integrating basic skills instruction into the pathways. Each of the Roosevelt curricula initially focus on building a solid foundation of academic skills while instilling responsibility, self-esteem, and work ethics. Teachers incorporate applied learning techniques within reading, writing, and math classes. The relevance of class work is underscored by constant demonstrations of the connections between school and work. A variety of teaching methods and classroom activities, including hands-on projects and student portfolios, encourages the development of teamwork, problem solving, critical thinking, and communications skills. As students explore career options, the curricula provide career information, planning, and guidance for all students. For more information, contact Janet Warrington, Roosevelt High School, 6941 N. Central, Portland, Oregon 97203. (503) 280-5138

Oakland Health and Bioscience Academy exemplifies the school-within-a-school approach to curriculum integration. Integrated curricula in math, science, English, social studies, and health encourage students as individuals and in teams to apply the knowledge acquired in a discipline to interdisciplinary projects and internships. Portfolio assignments and projects integrate school-based and work-based learning, and academy teachers meet with industry supervisors to coordinate school and workplace curricula. In addition, all students are expected to complete practica that engage them as positive agents of change, applying newly acquired academic and technical skills in their own

communities. For more information, contact Mrs. Jordan, 4351 Broadway, Oakland, CA 94611. (510) 658-5300.

FOR MORE INFORMATION ABOUT THIS TOPIC, CONSULT THE FOLLOWING ORGANIZATIONS AND JOURNALS:

Publications

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Southern Regional Education Board. *Integrated Learning*. Atlanta, GA: Southern Regional Education Board, 1995.

Organizations

Association for Supervision & Curriculum Development (ASCD) is an international community of educators dedicated to the improvement of instructional supervision, instruction, and curriculum design. ASCD disseminates information on education research and classroom practices and forges links among educators through publications and training programs, seminars and conferences. ASCD is particularly interested in the general topic of curriculum integration and has sponsored both publications and conferences on this subject. 1250 North Pitt Street, Alexandria, VA 22314-1453. (703) 549-9110.

Center for Law and Education's VOCED Project works with schools and communities to develop school-to-work systems and improve occupational education programs. The VOCED Project publishes policy papers as well as practical guidelines and conducts workshops and conferences on how to improve programs. 1875 Connecticut Avenue, NW, Suite 510, Washington, DC 20009. (202) 986-3000.

Center of Occupational Research and Development (CORD) is a service organization that helps educators in schools and industry address the technical education, training, and retraining needs of workers. A primary organizational focus is the development of applied academic curricula. Among the curricula available from CORD are Applied Mathematics, Applications in Biology/Chemistry, Principles of Technology, and Tech Prep Resources. 601 Lake Air Drive, P.O. Box 21689, Waco, TX 76702-1689. (817) 772-8756.

National Center for Research in Vocational Education (NCRVE) was established under the Carl D. Perkins Vocational Education Act to sponsor applied research and development in the field of occupational education. NCRVE has funded a variety of projects and published several reports on integrated curriculum. University of California at Berkeley, 1995 University Avenue, Suite 375, Berkeley, CA 94704. (510) 642-4004.

National Consortium for Product Quality (NCPQ) is a project funded by the National Center for Research in Vocational Education and directed by the Center on Education and Work, University of Wisconsin-Madison. The NCPQ was established to accomplish a two-fold mission: (1) to develop, research, and implement school-to work product standards; and (2) to develop a national review process by which school-to-work materials can be collected, evaluated, and disseminated. Center on Education and Work, 964 Education Sciences Building, 1025 West Johnson Street, Madison, WI 53706. (608) 263-3152. Internet: bdougherty%cew@soemadison.wisc.edu.

The National Network for Curriculum Coordination In Vocational and Technical Education (NCCVTE) is a nationwide network of six curriculum coordination centers sponsored by the U.S. Department of Education, Office of Vocational and Adult Education. The network promotes sharing of curricula, professional development of state and local educators, research in curriculum design methodology, and coordination of development among states. The six centers are at the following locations:

- *East Central Curriculum Coordination Center*, Sangamon State University, F-2, Springfield, IL 62794-9243. (217) 786-6173.

- *Midwest Curriculum Coordination Center*, Oklahoma Department of Vocational and Technical Education, 1500 W. 7th Avenue, Stillwater, OK 74074-4364. (405) 743-5192.

- *Northeast Curriculum Coordination Center*, New Jersey State Department of Education, Division of Vocational Education, Crest Way, Aberdeen, NJ 07747. (908) 290-1900.

- *Northwest Curriculum Coordination Center,* Saint Martin's College, Old Main, Room 478, Lacey, WA 98503. (206) 438-4456.

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The Network, Inc. is a nonprofit organization formed to link innovative schools in Massachusetts with each other. The Center for Learning, Technology, and Work, a division of The Network, helps schools and districts that are developing school-to-work efforts. In order to support teachers and administrators who are designing new programs, the Center provides assistance on implementing school-to-work strategies, restructuring high school curricula to support workplace learning, introducing technology education programs, and integrating academic and occupational education. 300 Brickstone Square, Suite 900, Andover, MA 01810. (508) 470-1080.

Southern Regional Education Board's *High Schools That Work* program, operated by **SREB's State Vocational Education Consortium**, aims to improve the education of students enrolled in high school occupational programs at more than three dozen pilot sites. The consortium develops, applies, evaluates, and promotes strategies to strengthen students' competencies in communications, mathematics, science, critical-thinking, and problem-solving. 592 Tenth Street, NW, Atlanta, GA 30318-5790. (404) 875-9211.

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ERIC CLEARINGHOUSE ON URBAN EDUCATION

DIGEST

INTEGRATING ACADEMIC AND VOCATIONAL EDUCATION: AN EQUITABLE WAY TO PREPARE MIDDLE LEVEL STUDENTS FOR THE FUTURE

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Introduction

The need to prepare young people to fill the jobs needed by the changing American economy is a problem of increasing concern. A large number of students, who may not have the resources to go to a university but who certainly have the ability to work well at decent-paying jobs, are tracked into a general high school program. They are not provided with either the academic skills needed for attendance at a junior or technical college, or the vocational skills for an upwardly bound employment path. Moreover, such tracking perpetuates the pervasive American problem of unequal educational and economic opportunity, because a large proportion of these students are not white and middle class.

Ways to correct this inequity are now being explored, the result, in part, of passage of the 1990 Carl D. Perkins Vocational and Applied Technology Act, which funds (especially in urban areas) the development of programs to better prepare public school students for work. The result is an effort to "build up the middle"—of the U.S. work force and of the high school student body—by creating a variety of education models that demonstrate how academic learning can be applied practically to develop workplace competence and flexibility. One option, integrating academic and vocational education, looks particularly promising. It is described below.

Curriculum and Teaching Strategy

The integration of academic and vocational education is a curricular and instructional strategy that makes learning more available and meaningful to all students. A program of sequential courses, it allows students to achieve vocational competencies as it fosters learning of abstract or theoretical concepts under applied conditions. Moreover, it replaces the job-specific instruction of traditional vocational education, which limits students' employment opportunities, with contextualized knowledge that provides students with a range of problem-solving and employability skills.

Integration also fosters teacher collaboration in curriculum planning and coordination of instruction. Finally, it involves the business community in the program (Bodilly, Stasz, & Ramsey, 1992).

School Organization

School organization for providing an integrated education can vary. Grubb, Davis, Lum, Plihal, and Morgain (1991) and Grubb and Stasz (1991) have identified viable models:

Incorporating more academic content into vocational courses. Vocational education teachers use newly-developed curricula to infuse traditional instruction with instruction to increase core academic competencies. Largely a remedial program, it does not require new institutional arrangements.

Combining academic and vocational teachers to incorporate academic competencies in vocational courses. Also remedial, here, academic and vocational education teachers collaborate in developing curricula to infuse vocational education courses with academic content.

Making the academic curriculum more vocationally relevant. Most commonly accomplished through applied academic courses, this approach uses prepackaged curricula to provide academic instruction in concrete subjects that demonstrate their practical relevance. The curricula of vocational education courses remains unchanged.

Modifying both academic and vocational curricula and curricular alignment. "Aligning curriculum horizontally," vocationally-oriented material is simultaneously introduced into academic courses and academically-relevant material is presented in vocational courses through the collaboration of academic and vocational education teachers. This model can affect all students in the school. "Vertical alignment" integrates academic and vocational material through a coherent sequence of courses at the program, rather than the course, level.

The Career Academy model. "Academies" operate as schools-within-schools. They align clusters of courses around a specific career, with a group of teachers collaborating on developing an integrated academic and vocational program for a student body with whom they work over a period of years. This model allows students to work with employers in industries related to the school's occupational focus.

Single-occupation vocational schools. These are self-contained independent structures, functioning as career magnets that tend to break down the academic isolation of socially and racially segregated neighborhood schools.

Replacing departments with occupational clusters. Here, in a structure resembling schoolwide academies, traditional academic and vocational departments are replaced by "clusters" organized by occupations. This model aligns a coherent sequence of courses and allows greater collaboration on curriculum and instruction among teachers because they belong to a cluster as well as a department.

Combining departments and occupational clusters. This program integration strategy creates occupational clusters that cut across departments to result in a program offering solid academic course work and sophisticated vocational courses. It provides information about, and access to, local industry.

Benefits of Integrating Academic and Vocational Education

Student Motivation. Integration is an ideal way to help schools retain students not interested in the benefits of an academic education per se, but aware of the advantages of entering the job market with skills.

Workplace Linkages. Program components that allow students to work provide them with a needed income, hands-on experience in their chosen field, and contact with employers who may offer them career path jobs after graduation.

Equity. Integration can help offset stratification and discrimination in schools and the work force. It offers students identified as lacking basic academic and higher order thinking skills a meaningful education instead of relegation to a low track program that could compromise their future opportunities (Stasz, 1992). Since the majority of those low tracked are students of color, limited English speaking, and poor, providing integration as an alternative to tracking not only eliminates a stigma that could further impede their ability to learn, but provides them with skill training to help them compete successfully for jobs with more advantaged applicants.

Educationally Rich Learning. Integrating vocational and academic education provides students with educationally rich and problem-centered learning (Berryman & Bailey, 1992). Following the principles of the cognitive apprenticeship model, integration is an effective curricular and teaching strategy that allows students to develop the cognitive skills needed to apply academic learning to practical situations (Collins, Brown, & Newman, 1989).

Changes in School Organization. Integration works well in a variety of school settings, although it works best when academic and vocational education teachers collaborate and use a specially developed curriculum to maximize both areas of learning. Integration programs provide models that can be replicated for other courses of study, and they can offer large comprehensive high schools an attractive model for restructuring into smaller units.

Qualified Work Force. Absent the apprentice and training programs of the past, employers seeking to fill middle skill level jobs with ever-changing duties, look to U.S. schools to produce a qualified work force. They need graduates who not only can accomplish discrete tasks, as traditionally educated vocational education majors could, but who have problem-solving skills that allow them to be flexible when carrying out aspects of their jobs. Students who complete integrated education programs are most likely to meet current and future employer needs.

Implementing Integration

While the benefits noted above suggest that schools should move toward integrating academic and vocational education, there are important constraints that may have to be overcome first. The following changes must be made.

Student Orientation. Students will need to assume more responsibility for their own learning; learn in less structured situations; work in teams with resources more common to non-school settings; and apply their knowledge.

Curriculum and Assessment. Some integration models require new curricula and even a new way of combining areas of study. Multiple choice tests do not match a learning paradigm that stresses the ability to apply knowledge, and standardized assessments for new competencies have not yet been developed. Similarly, post-secondary schools may not have a system for assigning credit for applied course work.

Teacher Roles. Some models require teachers to develop new areas of expertise, to learn new teaching methods, and to work more collaboratively with each other.

School Organization. Schools will have to accept the equality of academic and vocational education. They may have to alter certain traditions, such as departmental divisions, the 50-minute instructional period, and the length of the school day. Some such changes may be impeded by state regulations, union contracts, and fiscal constraints.

The potential benefits of an integrated academic and vocational education program--particularly to minority and poor students--are great. So, while the obstacles to implementing the program may seem formidable, the efforts made by policy makers and administrators to surmount them may very well be profitably spent.

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INTEGRATION OF ACADEMIC AND VOCATIONAL EDUCATION MYTHS AND REALITIES

by Bettina A. Lankard, 1994

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Although most educators support the concept of integrating academic and vocational education and recognize the benefits it affords students, implementation of integrated curriculum and instruction is seen as problematical. Disciplinary specialization, status differences among teachers, and lack of leadership are some of the stumbling blocks noted by Grubb and Kraskouskas (1993). This MYTHS AND REALITIES highlights some of the "tales" that discourage integration and discusses the "truths" about what is involved in the implementation process.

MYTH: SUCCESSFUL INTEGRATION RELIES SOLELY ON TEACHER COMMITMENT AND COOPERATION

Although teachers play a significant role in integrating academic and vocational education, they cannot effect significant change in the teaching and learning process without administrative, institutional, community, and state support. Traditionally, the academic curriculum and vocational curriculum have been offered in significantly different ways. To merge the two in an integrated approach to education requires new forms of organizational delivery. Integration involves restructuring, wherein the administrator becomes more of a facilitator than a director, providing teachers with opportunities that will empower them in their efforts. Some activities recommended to facilitate integration are the following (Finch et al. 1992):

1. Appoint a variety of teachers from both academic and vocational education to serve on committees so that each area is equally represented.

2. Bring together a team of teachers to write curriculum in team work sessions, thereby providing opportunities for teachers to learn from each other and to develop mutual respect for their unique areas of expertise.

3. Provide professional development opportunities to help teachers develop the competencies required for integrating curriculum and instructional methods.

No matter how enthusiastic and committed teachers are to the concept of academic and vocational integration, their success demands that they acquire new skills and expand their knowledge to include information across the disciplines. Daugherty and Wicklein (1993), for example, found that the math and science teachers in their study lacked understanding of technology education and how to integrate the disciplines. Since team teaching is a requirement of most integrated courses, teachers must receive training in ways to integrate learning concepts (Lankard 1993). Workshops to address these issues should be initiated and encouraged for teachers' professional development. For example, teachers who have had training and experience in integrating academic and vocational education might offer workshops for teachers new to the process on such topics as team building, networking, collaboration, and problem solving, or on content-specific topics relevant to joint efforts.

Institutions can facilitate integration by considering new policies for delivering integrated instruction. For example academic instruction typically involves only in-school experiences whereas vocational education has traditionally included in-school skills instruction and out-of-school work experiences. Academic curriculum is offered in comprehensive high schools and general high schools; vocational curriculum uses these two environments plus vocational high schools and area vocational centers. Restructuring for integration may require that institutions move classroom locations of both academic and vocational teachers so they will have more ready access to one another (Schmidt et al. 1992).

Integrating academic and vocational instruction also requires the cooperation of local schools and state-level policy boards. In the past, lack of state-level policy reinforcing integrated curriculum and instructional delivery has been a barrier to implementation. Other barriers include turf issues that separate state-level boards of vocational education from departments of education in many states (Love and Gloeckner 1992).

On the community level, administrators can obtain direction for their integration efforts by working with the business community to determine competencies needed by local employers. Some states are pooling funds to address the criticisms of business and industry leaders who say that many students lack adequate academic skills when they enter the work force. The Center for Occupational Research and Development and the Agency for Instructional Technology were involved in the development of an applied academics curriculum package on Principles of Technology, for example, which used approximately $3.5 million in pooled funds for its initial development (ibid.).

MYTH: INTEGRATION WILL RESULT IN THE LOSS OF TEACHING POSITIONS

Enrichment rather than elimination describes the nature of teaching positions in an integrated education system. Teachers must recognize and experience personal benefits as a result of team teaching and interdisciplinary teamwork so they can develop confidence in the value of their performance in integrating academic and vocational education. Those who fear loss of position due to integration will be reluctant to give it their full support. Professional development is one way to expand the expertise (and confidence) of teachers entering into a new form of education delivery. The Southern

Regional Educational Board State Vocational Education Consortium found that teaming academic and occupational teachers to make learning more relevant to students in their classes reaped rewards for the teachers as well as benefits for the students. As a result of this approach, "teachers reported that they learned new strategies for teaching and developed renewed enthusiasm from working together" (Maryland Department of Education 1993, p. 4). Love and Gloeckner (1992) reported on a number of studies involving joint efforts by vocational and academic teachers noting that the benefits for the participating teachers included "increased job satisfaction, increased ability to teach basics and theory, new knowledge of real world applications of theory, a more positive school climate, and acquisition of new teaching strategies" (p. 16).

Other activities to expand teacher awareness and competencies for integrated teaching and learning include cross-program visitations and workplace internships. By observing working models of integrated instruction and participating in the application of such models, teachers are able to recognize the importance of teaching all students problem-solving, teaming, communication, and technology skills.

Teacher certification requirements may be a concern to some teachers if the requirements do not reflect support of integrated curriculum and instruction. For example, some vocational teachers have restricted certificates due to limited educational background. It is important that these teachers be afforded staff development opportunities so they can be certified to teach other classes, such as applied English (Schmidt et al. 1992).

"Most models of integration do not require cross discipline certification, however, as they are based on collaboration among staff, the sharing of expertise, and joint planning and delivery" (Maryland Department of Education 1993, p. 16). Personnel exchanges are one example of collaboration across two disciplines. For example, a math (academic) teacher may exchange several hours of teaching a week with an automotive (vocational) teacher. In this exchange the academic teacher would teach the math or business content relevant to the vocational course in return for the vocational teacher's instruction in the academic course on the work application of the math (Cobb 1992).

Although the integration of academic and vocational education places varied demands on teachers, their joint effort is critical in the implementation process. Each type of teacher—academic and vocational—brings unique and specific skills and expertise to the integration process. The goal is not to eliminate one or the other but to bring them together to provide the most comprehensive program.

MYTH: INTEGRATION RESULTS IN THE MAJORITY IMPOSING THEIR WILL ON THE MINORITY

Partnerships are the key to successful integration efforts. Team teaching, collaborative curriculum development by teams of academic and vocational teachers, policy and practice committees composed of representatives of both academic and vocational education all require teachers to have expertise in group process skills. Finch et al. (1992) suggest that teachers can be aided in becoming full partners in schooling by acquiring knowledge and skills in areas such as "team building, prob-

lem solving, collaborative curriculum development, student learning across the curriculum, and outcome assessment. Specifically, teachers will need assistance so they can shift from instructing in an independent and autonomous manner to becoming participating members in the total school enterprise" (p. 3).

One technique fostering cooperation and collaboration is to use the "consensus strategy" approach. "Consensus strategy is a decision making strategy in which the group aims to arrive at decisions acceptable to all. It considers the views of all members and fosters an atmosphere of mutual respect. The consensus strategy contains the following steps" (Love and Gloeckner 1992, pp. 7-8): (1) brainstorming solutions; (2) evaluating the solutions as a group, discussing points as appropriate; (3) making a decision, which should be a consensus of which solution(s) to try; and (4) agreeing on how to implement the decisions.

Strong leadership can bring balance to the integration process and help to "overcome social, intellectual, and even physical barriers that can exist between the vocational and academic staff in a high school" (Cobb 1992, p. 4). Administrators can facilitate respect and involvement of teachers across various disciplines by involving both academic and vocational instructors in the integration process from the very start. Additionally, "facility or environmental integration can be encouraged by changes in buildings or laboratory settings such that two or more disciplines are taught together. For example, a vocational automotive teacher might use the physics laboratory for focus on the resistance associated with braking an automobile" (Cobb 1992, p. 9).

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TRENDS TOWARD A CLOSER INTEGRATION OF VOCATIONAL EDUCATION AND HUMAN RESOURCE DEVELOPMENT

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Running Head: Trends Toward a Closer Integration

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Abstract

New workplaces require broader skills than ever before and place intense pressures on all providers of workforce preparation to enhance the competitiveness of America's workforce. Vocational education and human resource development (HRD) are in the forefront in seeking new approaches to preparing the workforce of the future. This paper presents arguments that trends toward a closer integration of the two fields are appropriate responses to meet the challenges and should be pursued more vigorously. Historical, philosophical and practical contributions of both fields are examined as foundations of commonality upon which to build cooperative efforts. Analyses revealed substantial basis for cooperation that is largely overlooked. Integrative mechanisms and initiatives are discussed.

TRENDS TOWARD A CLOSER INTEGRATION OF VOCATIONAL EDUCATION AND HUMAN RESOURCE DEVELOPMENT

The U. S. economy is dealing with the effects of competitive global markets that have fundamentally reshaped many elements of business practice. Persistent waves of restructuring and "right-sizing" initiatives are testimony to struggles businesses face to remain economically competitive. Lightning fast change, demands for higher quality, and ever changing technology are making jobs and skills obsolete overnight. Unfortunately, many businesses have discovered that workers are not prepared well enough and lack basic skills.

The American Society for Training and Development (1990) suggested that:

1. The average 1.4% of payroll that U.S. companies invest in training reaches only 10% of the workforce.

2. The K-12 system as presently structured will not be able to help most of the people who will be working in the year 2000.

3. Ninety percent of the people who will be working in the year 2000 were already working in 1990.

4. Within the next 10 years, 75% of Americans working today will need retraining

5. By the year 2000 there will be too few trained and knowledgeable workers to satisfy the nation's economic needs.

Workplaces today require new and broader skills than ever before. Organizations have realized that they must have better trained workers if they are to survive. In response, many are increasing their training and demanding higher levels of entry level skills for all jobs. The 1993 training industry survey (Filipczak, 1993) showed that organizations increased their training budgets 7% in 1993 and trained 15% more people. As a consequence, all providers of workforce preparation are facing intense pressures and challenges to enhance the competitiveness of America's workforce. Vocational education and human resource development (HRD), two of the leaders in workforce development, are in the forefront in seeking the best approaches to preparing the workforce of the future.

Unfortunately, these fields are seen by many as separate and have tended to operate more in parallel than in partnership, thereby limiting the effectiveness of both. On the surface they may appear to be closely linked, and there are clearly areas such as technical skills training in which the two fields serve common clients and sometimes coordinate quite closely. In reality, the two fields have only begun to exploit possible synergies.

To meet the challenges of preparing today's workforce, closer integration of the vocational education and HRD fields is needed. Integration would represent a powerful and logical partnership of two disciplines that are preeminent forces for preparing the workforce of the future. By forging closer linkages, the joint effect on workforce effectiveness would be even more significant. The purpose of this paper is to examine historical, philosophical and practical contributions of both fields that can be woven together to help build and maintain a world class workforce.

Human Resource Development Perspective

HRD was defined by Swanson (1995) as “a process of developing and/or unleashing human expertise through organization development and personnel training and development for the purpose of improving performance.” While others have advocated learning as a defining paradigm for the field (Watkins & Marsick, 1995), we agree with proponents of workplace performance as the defining paradigm for HRD. According to the American Society for Training and Development (ASTD) Models for HRD

Practice (McLagan, 1989), HRD improves performance through the integrated use of three major practice areas: training and development, career development, and organization development.

Training and development focuses on development of the individual, primarily through planned learning experiences. In the past, formal classroom training programs comprised the majority of HRD activities and the terms training and HRD were often used synonymously. Today, HRD has evolved to a broader focus on improving workplace performance by developing human resources. HRD is moving away from a process identity, which defined the field by a single intervention tool and delivery mechanism (training), to an outcome identity employing a broad tool kit of performance enhancing interventions and strategies. Formal classroom training, while still an important tool, is declining in importance as HRD is pressured to respond to the new workplace with more effective and efficient tools.

As organizations encounter more frequent and complex changes, they are forced to change in very fundamental ways. Practitioners who have cast themselves only in traditional training roles are finding themselves unable to respond to new challenges, or playing only small roles in the change process. HRD practitioners, on the other hand, are finding themselves in increasingly important roles in helping organizations achieve their strategic goals.

Hence, the other two components in ASTD's framework, organization development (OD) and career development (CD), are of increasing importance. Organization development focuses on group and inter-group effectiveness, particularly in managing organizational change. OD practitioners recognize that individuals employ their skills in the broader context of organizational systems. Individual knowledge and skills are but one component of a systems approach to organizational effectiveness. Equally important are organizational level factors such as culture, structure, and strategy as well as group level factors such as inter-group relationships, leadership and work design. OD interventions tend not to be formal classroom training, but rather action learning strategies.

Career development is seen as the process of matching individual and organizational needs and determining development needs that arise from that match. The new employment contract prevalent in organizations today removes the paternalistic notion of careers where career development often meant ceding responsibility to the organization. Today, employees are largely responsible for planning their own careers and development needed to achieve their goals. Thus, career development systems have become increasingly important.

HRD should not be confused with its close cousin, human resource management (HRM) which includes many of what were once called personnel functions. HRM typically includes elements of the human resource system such as staffing, selection, compensation, benefits, union/labor relations, Equal Employment Opportunity and Affirmative Action (EEO/AA). Both HRD and HRM are concerned with productivity and performance of human resources. HRD, however, views employees as an asset to the enterprise whose value is enhanced by development. Its primary focus is on growth and employee development. HRM, on the other hand, tends to emphasize creation and maintenance of the human resource system. Though the distinction between them tends to blur at times (particularly in small companies), there are important differences between them in philosophy, educational preparation, and functions.

HRD shares important philosophical elements with vocational education. Like vocational education, it emphasizes developing individual potential and skills. However, from an HRD perspective, development occurs to enhance the organization's value, not solely for individual improvement. Individual education and development is a tool and a means to an end, not the end goal itself. This can be clearly seen in HRD evaluation and needs assessment methodologies which stress not only job performance, but impact on the organization as the final criteria for success.

Vocational education and HRD share the same historical roots in apprenticeship and on-the-job training systems which were predominant in early years of our country. Only in this century have HRD and vocational education begun to diverge, and it is really only since World War II that HRD's role has expanded beyond worker training. Histories of HRD (Nadler & Nadler, 1989) read remarkably like histories of vocational education until that time. HRD has not stopped focusing on training workers and other populations also served by vocational education, but has continued to broaden its scope as needs dictated. Vocational education has continued to focus mainly on technical skill development which is consistent with its historical mission. From their histories it might be more appropriate to view these fields as different branches on a tree as instead of different fields. Yet, in practice, these two fields have often diverged and often find themselves pursuing separate initiatives while both are seeking to meet the common challenge of preparing America's workforce. Is it time for vocational education and HRD to rediscover their shared heritage? We think so.

The Vocational Education-HRD Relationship

Vocational education and HRD share many common philosophical roots that can serve as a basis for a closer relationship. These include:

1. Learning as the key to competitiveness and economic progress—Both fields recognize that learning is the key to competitiveness—individual competitiveness for vocational education and organizational competitiveness for HRD.

2. Learning as a means to an end—Both fields use teaching and learning as a means to achieve a broader goal, not simply learning for its own sake. In addition, the end goal is a specific and tangible end product, not just a broad societal goal.

3. Preparing learners for the workplace—Unlike other parts of the educational system, predominant emphasis is on providing learners knowledge, skills and abilities needed for the workplace.

4. Learning as preparation for work performance—Both fields have as their goal enhancement of an individual's ability to perform on the job. The emphasis is on performance which shapes all aspects of their practice.

5. Focus on applied learning - The emphasis on performance leads to a focus on application of knowledge and skills learned.

It is these common goals that differentiate the two fields from other educational and developmental endeavors in our society and underscore the need for them to explore a closer relationship. No other

discipline has as their core mission the application of learning and planned development for work effectiveness. Traditional educators certainly focus on learning and other disciplines on human development (e.g. social work), but without close connection to the workplace. Other business disciplines (e.g. HRM) focus on work effectiveness, but without embracing the power of learning and developing human potential. It is only these two disciplines that understand how to link the largely humanistic disciplines of learning and development to work performance and economic competitiveness. The uniqueness, power and potential of this integration should not be minimized.

This is not to suggest that the two fields are identical or should be completely merged. Evans and Herr (1978) noted that there are three basic objectives of any public school vocational education program:

> (1) meeting the manpower needs of society, (2) increasing the options available to each student, and (3) serving as a motivating force to enhance all types of learning. A few vocational education programs sponsored by employers have these same three goals, but most do not. Very often they are designed to meet the short-term manpower needs of a single employer...The managers and stockholders of profit making organizations rarely see justification for using their moneys and facilities to train more people than they need. (p. 4).

Education, they noted, is the only social institution which has increasing individual options as a major goal. They further noted that content of vocational education ranges from that which is specific to a particular employer, to that which is useful in almost any enterprise. A major tenant of vocational education from its earliest times has been a focus on the individual and increasing individual options, particularly as they relate to work. In recent years, the field has also been called on to increase its emphasis on broader societal goals.

Whereas vocational education's primary focus is on the individual, HRD's primary focus is on the organization. Both share an emphasis on the workforce but individual development is the means by which HRD enhances organizational effectiveness. Vocational education has a humanistic mission than can never be fully shared by HRD, which is driven more by organizational self-interest. General vocational education rightly retains a commitment to initial preparation for entry into work while HRD concentrates more on development of those already employed. Unfortunately, these differences have kept the two fields farther apart than they should have.

While some might argue that there isn't much of a division between them, we disagree. Only a limited number of HRD practitioners view vocational educators as an essential partner. Where partnerships exist, they tend to apply only to a limited range of technical skill areas. From the perspective of the shared heritage and similar philosophical roots, one can only conclude that there must be some division because existing partnerships are only a small part of what could exist. Additionally, anecdotal evidence suggests there is only limited overlap in membership between the American Vocational Association and HRD organizations such as ASTD, despite the fact that conference programs indicate many shared interests. It seems clear that divisions do exist.

There is no reason why both can not retain their uniqueness while forging a closer relationship with the other. This is not to suggest that there is not frequent interaction between the two fields. How-

ever, this interaction is often more incidental than intentional and falls short of recognizing that both fields have distinct, but interrelated, roles in workforce and career development.

Re-Discovering a Shared Agenda

Dykman (1993), in reflecting on the current status of vocational teacher education, noted that problems facing the field today include declining teacher education enrollments, declining enrollments in secondary vocational programs, low teachers salaries, and significant reductions in traditional sources of state and federal support for vocational teacher education. However, there is a decided lack of literature on how problems can be effectively addressed.

Has vocational teacher education become so driven by its past that it is unable to respond to changes sweeping the workplace? It is often said that the railroad industry declined because its leaders never realized they were in the transportation business, not the train business. Vocational educators must realize that they are not in the vocational education "business" (though some may disagree), but rather are in the workforce education "business" which is changing drastically. Harrison (1992) suggested that "perhaps . . . we have lost the focus on what is important—developing human capital of this nation" (p. 28). The future lies in refocusing on this basic mission and rebuilding natural linkages with other providers such as HRD. Vocational educators must increasingly offer a full range of workforce preparation programs, from entry level preparation to making the oldest employee more productive.

Closer linkages with HRD would help vocational education broaden its workforce preparation role in two major arenas. First, it would help vocational education expand its role in continuing education for workers. At one level, it would help vocational education extend the scope and role of employee training programs it can deliver. Many employers are only beginning to discover how valuable vocational education can be as a training resource. More importantly though, vocational educators must realize that staying in a traditional training role severely limits their potential in the broader workforce preparation arena. The linkage with HRD is necessary to help vocational educators focus on enhancing organizational effectiveness, not just on delivering training.

Second, it would help vocational education strengthen its current role of providing preparation for work entry. By linking preparation for work to continuing education at work, preparation for work becomes one of the anchors for an integrated continuum of workforce development programs. The synergy created should strengthen entry programs and enhance the economic competitiveness of graduates. While current entry programs do not operate in isolation from the workplace, they fall short of an integrated preparation continuum.

This linkage is consistent with other calls for new relationships between education and work. The loudest call may be from the U. S. Department of Labor through its Secretary's Commission on Achieving Necessary Skills (SCANS). Its report, titled Learning a Living: A Blueprint for High Performance (commonly known as the "SCANS Report"), issued a resounding call for a more integrated system of institutions and systems which they called the "learning a living" system (p. xiii) and pointed directly to the integration and "dialogue between two major groups, one based

largely in the world of work, the other consisting mostly of educators (1992, p. 23)." Their recommendation to schools and employers was:

> Our primary message to schools is this: Look beyond the schoolhouse to the roles students will play when they leave to become workers, parents and citizens . . . . To employers we say: Change your view of your responsibilities for human resource development. As an employer, your old responsibilities were to select the best available applicants and retain those you hired. Your new responsibilities must include developing the human resources in your community, your firm, and your nation (p. 17)

While there were many elements to the SCANS recommendations, at the heart of all of them was the concept of a fully integrated system of providers of knowledge, skills and abilities to prepare people for work and maintain their performance once employed.

The establishment of a fully integrated system of work-performance-enhancing institutions and providers will require that bridges be built that are only beginning to emerge. Because of close philosophical lineages and shared histories, it would seem logical that leadership for this integration and development of a "learning a living" system would come from closer linkages between vocational education on the education side, and HRD on the employer side. No other entities in either the educational system or in business and industry have as much commonality, and therefore potential, for weaving together the tightly knit system of work-related human development providers that the United States needs to maintain its economic competitiveness.

Seeds of Change in Vocational Education

Within current debates surrounding the restructuring of vocational education lie some seeds of change in directions we have described. First, there are increasing calls for closer linkages with business. Cheek (1990) and Doty (1990) for example noted the need for programs to evidence clear and functioning relationships with business and industry, regardless of the levels at which they are conducted. While it is generally accepted that programs at all levels should have close ties to the workplace, there is less clarity on how to build the linkages. Strong (1990) surveyed state directors of vocational education and found that how to build linkages remained their largest problem. The two most commonly used approaches were advisory committees and training for business and industry through "quick start" types of programs. However, there was also mention of numerous other efforts such as small business development centers and technical assistance centers. All pointed to the seeds of stronger linkages to HRD and Strong (1990) concluded that:

> I would suggest if all schools or school departments at all levels would heed the challenge and take a proactive role in building effective linkages with business and industry, then vocational education's role would not only become more clear, but there would be no question as to the role of vocational education as the workforce provider of the nation (p. 148).

Advisory committees are useful and an important first step. They do not, however, provide integrated linkages to performance building initiatives in which HRD engages.

The second significant seed of change is the ongoing debate about restructuring vocational education curricula. In recent years the fundamental tenants of vocational education have found renewed support as the nation has examined the best means to prepare and maintain a competitive workplace. However, there is debate about the best approach, particularly concerning integration of academic (non-skill specific) content with vocational instruction. Integration proposals range from highly job specific vocational education that may include only those general education elements that specifically relate to a particular job, to training for a wide range of occupations and a broader base of general education content.

We have moved from a period when highly job-specific vocational education was in vogue, to one based on preparation in an occupational family that may include appropriate general education components. The work of Carnevale and associates (1990) and others in HRD who have sought to identify the kinds of skills needed by employees have stressed broad skill preparation and inclusion of academic skill training. There seems to be some agreement that programs totally devoid of any occupational potential, or those lacking in essential academic components, are equally limiting. Programs that integrate both occupational and general education components offer the best promise for preparing students for productive livelihoods.

At the heart of these discussions is the need to broaden the role of vocational education to focus on maximizing work skills. Because the workplace has changed, business and HRD are demanding a broader and more cross-functional range of workplace skills and competencies. A number of authors (e.g. Dykman, 1993; Mateen, Tate, Mortwedt, Manspeaker and Krug, 1993) have addressed the role of vocational education in helping employees succeed in a rapidly changing workplace. Business needs a more flexible, adaptable, and highly skilled worker to adapt to increasingly sophisticated technologies. This meshes well with vocational education's desire to maximize individual options and is quite consistent with a broadened and more inclusive vocational education curriculum. The result is new common ground and shared goals that can spawn many productive linkages between HRD and vocational education.

This new philosophy is reflected in Tech-Prep initiatives which provide a means for increasing student options and are an excellent example of renewed linkages. Tech-prep advocates integrating academic and vocational education, resulting in a highly experiential format based on academic rigor. The focus is on developing basic competencies needed to succeed in an evolving workplace in cooperation with business and industry. In addition, this format embraces the concept that education continues across the lifespan. Tech-Prep directly confronts the notion that maintenance of the traditional dichotomy between vocational and academic education will not allow our educational system to produce a world class workforce. At the same time, vocational education is being called on to reclaim its history as a provider of preparation for entry and progression in the workplace. Approaches such as these to preparing and maintaining a competitive workforce provide ready opportunities for cooperation between vocational education and HRD to the collective benefit of employer and employee alike.

Seeds of Change in HRD

The HRD community has also recognized the need for a closer relationship between school and work. Increasingly, employers are caught between demands for more highly trained workers and a shrinking supply of those workers. ASTD commissioned a Workplace Basics study which recommended seven skill groups that are necessary to provide all persons with basic skills for employment of any type (Carnevale, Gainer & Meltzer, 1990, p. 3). These seven groups were:

1. Learning how to learn

2. Basic skills (reading, writing, computation)

3. Communication skills (speaking and listening)

4. Adaptability skills (solving problems and thinking creatively)

5. Development skills (self-esteem, motivation and goal setting, career development)

6. Group effectiveness (interpersonal skills, teamwork, negotiation)

7. Influencing skills (understanding organizational culture, leadership)

These workplace basics are highly congruent with the tenants and expertise of vocational education, both in philosophy and practice. In HRD's view, equipping individuals with these skills provides them maximum flexibility for employment options within organizations, but they are also a tremendous benefit to the individual. Preparing employees with these competencies then is a logical area for HRD to look to vocational education for guidance and assistance.

Overlooked is the fact that all students, vocational or non-vocational, need preparation in these workplace competencies. Vocational educators are the logical ones to take leadership in integrating these competencies across the curriculum. Such a role would be consistent with other moves to integrate academic and vocational education. However, it will require vocational educators and HRD personnel to change their perspective to see themselves as part of an integrated system.

As noted earlier, one HRD function in which vocational education had a significant presence was preparing supervisory personnel, notably following World War II. The new global marketplace has spawned radically new approaches to supervision and management. Supervising workers in a "do more with less" environment that promises little in the way of job security and perhaps fewer economic rewards has made old methods obsolete. While there are fewer supervisory positions in organizations today, demand for supervisory and management re-training is strong. Vocational education could be a key player as it once was in this arena.

HRD has probably overlooked the contributions vocational educators can make as resource persons. ASTD's data (Carnevale, Gainer, Villet & Holland, 1990) showed that about one-third ($9 billion) of

employer-sponsored training is purchased from outside providers. Of this amount, only $760 million went to vocational or other schools. The largest share ($4.3 billion) went to community colleges, technical institutes, and four-year colleges. Clearly there is room for growth. While many organizations look to post-secondary vocational educators to provide skills training, they could also look to them for a broad range of workplace competencies. Vocational educators may also be the logical first step for developing programs to solve basic literacy problems on the job. Because of their shared roots and perspective on education, vocational educators should be a "first stop" when turning to outside providers to solve many training needs.

Conclusion

We have argued that vocational education and HRD grew out of the same roots and share many common goals and clientele. What some might see as an already close relationship, we argue is just the beginning of a trend that needs to be not only nurtured, but significantly expanded. Furthermore, the divergence of vocational education and HRD, while once expedient for both fields, now represents a barrier that needs tearing down. If vocational education is to play a key role in meeting the immense challenges of maintaining the competitiveness of America's workforce, it must evolve by forging a closer relationship with HRD. We agree with other authors that identify HRD and industry training as one of the key strategies to revitalizing the vocational education profession (Adams, Pratzner, Anderson & Zimmerer, 1987).

The evolution need not be difficult. The challenges of preparing tomorrow's workforce and retraining today's workers are rich with opportunity for new linkages. Some of the logical "next steps" where vocational education and HRD can link include:

1. Preparing workers for change
2. Enhancing acceptance of diversity in the workplace
3. Integrating special populations into the workplace
4. Increasing basic skills literacy skills of the workforce
5. Increasing the payoff from learning interventions
6. Re-training obsolete workers
7. Providing continuing education for "upskilling"

Indeed, many partnerships have begun to emerge. While forming working relationships with business is not new for many vocational educators, our proposed evolution requires a rethinking and broadening of the purposes for those relationships.

Where HRD and vocational teacher education programs exist on the same university campus, bridges need to be built to facilitate cooperation in areas of mutual interest. On campuses where

vocational teacher education programs exist and a HRD program does not, consideration should be given to redefining the vocational teacher education mission to address both of these functions. Many member institutions of the University Council for Vocational Education have expanded their programs to include some focus on HRD.

Vocational education and HRD have a significant opportunity to be a force for change in preparing a world class workforce. Forging these linkages will help ensure successful, vital programs. We believe that a mutually supportive relationship with HRD is one dimension that should not be overlooked. The potential benefits from this relationship spans all levels from preparation for job entry, through university programs at both undergraduate and graduate levels, to on-the-job training. It is a logical marriage with deep historical and philosophical roots that represents a true win-win for both.

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WHAT WORKS

When Teachers Integrate Vocational & Academic Education

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Overview

The Carl D. Perkins Vocational and Applied Technology Education Act (VTEA) of 1990 emphasizes the need for strengthening the academic foundations of students in vocational programs. It calls for funding programs that integrate vocational and academic education through coherent sequences of courses so that students achieve occupational and academic competencies. A number of efforts are underway at local levels to implement innovative programs for achieving this integration. The Southern Regional Education Board/Vocational Education Consortium (SREB/VEC) includes seventeen states with more than forty pilot sites working toward the goal of improving the academic competencies of students completing high school vocational programs. SREB/VEC is advancing, applying, and evaluating approaches that will strengthen these competencies.

At SREB/VEC pilot sites, various instructional, curricular, and administrative intervention strategies have been implemented. This publication is based on the outcomes of a National Center for Research in Vocational Education (NCRVE) project* that focused on identifying strategies used at three of the pilot sites and examining faculty and administrators' perceptions of the effectiveness of the

* The project report, *Collaborative Efforts Between Vocational and Academic Teachers: Strategies That Facilitate and Hinder the Efforts*, is available through the NCRVE Materials Distribution Service, (800) 637-7652.

strategies. For the project, individuals were interviewed at three selected sites where a number of innovative strategies were being tried to improve the academic competencies of student completing high school vocational programs. Many of the strategies require extensive collaboration between vocational and academic faculty.

One of the selected sites is a comprehensive high school, while the other two each have vocational centers that serve four feeder high schools. At each of the three sites, ten individuals were interviewed over a two-day period. For the thirty interviews, nine academic teachers, eleven vocational teachers, three counselors, three vocational directors, two principals, one supervisor, and one remediation specialist were interviewed.

From interview responses to items asking for descriptions of strategies implemented at the three sites, a total of two-hudred fifteen statements were compiled. These statements were then summarized under four catagories: (1) instructional strategies, (2) curricular strategies, (3) cooperative efforts between vocational and academic teachers, and (4) administrative practices and procedures.

This publication highlights strategies from the four catagories that the individuals interviewed found to be effective. These strategies are ones actually used to achieve the integration of vocational and academic education at the "grass roots," school-site level. They provide a frame of reference for others working to achieve this integration in similar settings.

Effective Curricular Strategies

- Revise the curriculum to eliminate the general track and develop study plans for all students accordingly.

- Have counselors, vocational teachers, and academic teachers work together to develop plans for all vocational offerings—plans that prepare students for continued study at a four-year institution or in a postsecondary technical program in addition to immediate job-entry preparation.

- Have students adopt one of three plans—vocational, academic, or combined—as soon as possible, preferably by the time they enter ninth grade. The combined plan is not the old "general track," rather it provides both vocational and academic preparation.

- Provide teachers and counselors with examples showing them that in the past the policy of "no plan of study" locked students into "no future."

- Help academic teachers see the value of combining vocational and academic preparation. They will then be able to emphasize to their students the value of this preparation.

- Survey area employers to determine the use of technology and basic skills in various work settings; then use survey findings as a basis for changes in both vocational and academic offerings.

- Learn from employers which basic skills are needed on the job and then have vocational and academic teachers work together to stress them in their instruction.

- Restructure general (basic academic) courses so that they become applied courses —courses that relate learning to the real world, so students can see the validity of what they are learning. Have vocational and academic teachers work together to develop instructional examples for applied offerings.

- Inform students of curricular changes and reasons for them. Students perceive teachers more positively when they learn that vocational and academic teachers are working together.

- Help academic teachers learn to rely less on text-based instruction and to rely more on vocational teachers as a resource for teaching real world applications.

- Emphasize importance of vocational and academic teachers relating their instruction to applied uses. This helps eliminate the problem of students having to tell their new employers that they have not learned even the most basic skills for the work setting.

- Update library holdings so that they support a revised, applied curriculum.

- Make remedial instruction readily available to students who need it, particularly to help them meet academic skill requirements for vocational offerings.

- Institute a daily reading period of fifteen to twenty minutes when all students and teachers drop everything and read whatever interests them, not homework assignments nor other class related materials.

- Have all teachers include basic skills objectives and instructional activities in their lesson plans and constantly evaluate attainment of the skills.

Effective Instructional Strategies

- Encourage teachers to have higher expectations for their students, particularly in their use of basic academic skills.

- Assign meaningful homework on a regular basis, including in vocational classes. Establish expectations that homework be completed.

- Develop coordinated instructional plans between vocational and academic teachers—plans that reinforce instructional objectives, strategies, and content in both areas.

- Have vocational teachers serve as guest speakers in academic classes to reinforce the need for what academic teachers are teaching.

- Use vocational student organization projects as a springboard for having vocational and academic teachers work together.

- Have vocational and academic teachers agree to reinforce the same basic academic skills for a particular period of time—for example, a grading period or several weeks.

- Have vocational and academic teachers develop cooperative assignments.

- Have academic teachers borrow equipment/supplies from vocational laboratories to illustrate actual math and science applications.

- Have vocational teachers incorporate academic skills in their day-to-day instruction, not try to teach students through drill and practice procedures.

- Have academic teachers prepare bulletin boards that illustrate vocational applications of skills taught in their classes and vice versa.

- Keep lists of academic skills that the vocational and academic teachers have agreed to emphasize on display in vocational classrooms.

- Have all students, vocational and academic, provide both oral and written responses in complete sentences.

- Encourage vocational and academic teachers to compare what they are teaching in respect to basic academic competencies to assure that they are teaching the same things.

- Pretest students on basic academic skills needed to succeed in vocational classes, then offer remedial instruction only as needed.

- Provide vocational teachers with professional development activities so they can gain the expertise needed to teach basic academic skills.

- Provide professional development activities for achieving integration that focus on vocational and academic teachers when both types of teachers participate in the same activities.

- Establish procedures for academic teachers to follow when borrowing or using equipment from vocational teachers to assure proper use.

- Supply academic teachers with adequate equipment, tools, supplies, and training that supports the teaching of real-world applications of what students are learning.

- Provide opportunities for vocational and academic teachers to plan together in small groups, preferably in pairs, to facilitate exchange of information and to develop coordinated instruction. Further, establish procedures for evaluation of their cooperative efforts.

Effective Cooperative Efforts

- Have vocational teachers share projects that students complete in their classes with academic teachers. The projects can be used for further study in the academic classes.

- Provide time for academic teachers to observe and experience hands-on activities of ongoing instruction in vocational classes. Similarly, provide time for vocational teachers to observe ongoing instruction in academic classes.

- Encourage academic teachers to borrow books and other resource materials from vocational teachers and vice versa.

- Have vocational and academic teachers share, on a regular basis, competency lists, so they can learn the basic competencies the others teach or need students to know.

- Have teachers emphasize the same academic competencies and teach coordinated information about their use when vocational and academic teachers share students between their classes.

- Have academic teachers identify specific academic competencies they would like the vocational teachers to emphasize and vice versa.

- Provide extra time and incentives for vocational and academic teachers to work together, particularly when vocational teachers are located at vocational centers and have little regular contact with academic teachers.

- Assure that academic teachers feel they are part of the integration movement by involving them in the development of integration goals and objectives from the start.

- Emphasize to vocational teachers the complexity of learning and applying basic academic skills—skills that cannot be taught in isolation by academic teachers alone.

- Have vocational and academic teachers share class rolls, so they will know which of their students are in the others' classes.

- Eliminate the dichotomy that exists between vocational and academic programs by having teachers work together to focus on the needs of students, students that both vocational and academic teachers have in their classes.

- Provide adequate planning time for academic teachers to incorporate real-world examples in their instruction, planning time shared with vocational teachers.

Effective Administrative Practices and Procedures

- Establish a positive climate for the change process and involve all teachers.
- Help teachers develop ownership in the changes that are taking place by having them assume as many leadership responsibilities as possible.
- Publicize to the students, parents, and community the purposes and anticipated outcomes of the cooperative efforts being undertaken by the vocational and academic teachers.
- Let teachers know of administrative support for the changes in instruction through informal as well as formal channels of communication.
- Provide for staff development, with clearly defined outcome goals, that involves all vocational and academic teachers.
- Provide for staff development on an ongoing basis, avoiding a one-shot, quick-fix approach.
- Create a staff development environment that is free from distractions of the day-to-day routine of school operation.
- Divide teachers into small work groups when asking them to cooperate on various aspects of vocational and academic integration. Carefully assign teachers to the groups to facilitate positive outcomes.
- Provide open, unstructured time in a relaxed atmosphere for vocational and academic teachers to share.
- Provide incentives for teachers to be involved in planning and implementing innovative strategies for integrating vocational and academic education.
- Assure that guidance counselors are involved in all stages of the change process and that they support the concept of integration.
- Survey teachers, guidance counselors, and students to gain insight as to their perceptions and acceptance of the changes being undertaken.
- Have both vocational and academic teachers take time to ask students what they think they are learning and why.
- Review overall plans and strategies for achieving the integration of vocational and academic education with the teachers on a periodic basis—at least twice a year.
- Move classroom locations, whenever possible, of both vocational and academic teachers so that they will have more ready access to one another.

- When vocational offerings are provided at a vocational center, designate a teacher at the center and one at each feeder school as site coordinators for achieving integration.

- Designate responsible students as carriers of information between the vocational center and the feeder schools to eliminate central office delays.

- Provide teachers, students, and public groups accurate information reflecting measurable outcomes of integration.

- Assure that all administrators display commitment to the concept of integration, not just vocational.

- Monitor professional development activities contracted to outside sources to assure that they are meeting the needs of both vocational and academic teachers.

- Monitor planning and instruction of both vocational and academic teachers to assure that changes agreed upon to achieve the goals of integration are actually occurring.

- Update teacher evaluation procedures to reflect changes in teaching that occur due to the integration movement and increased emphasis on applied learning.

- Encourage uniform attendance and tardiness rules at both vocational centers and feeder schools.

ANNOTATED BIBLIOGRAPHY

Books, Guides, Handbooks, and Manuals

SERIES: **Education through Occupations in American High Schools**
TITLE: ***Volume I: Approaches to Integrating Academic and Vocational Education***
YEAR: 1995
AUTHOR: Grubb, W. Norton, ed.
AVAILABILITY: Teachers College Press, 1234 Amsterdam Avenue, New York, NY 10027, (800) 575-6566
ABSTRACT: This book contains the following papers examining approaches to integrating high-school vocational and academic curricula in U.S. high schools to provide education through occupations: "Resolving the Paradox of the High School" (W. Norton Grubb); "'The Cunning Hand, the Cultured Mind': Sources of Support for Curriculum Integration" (W. Norton Grubb); "The Integration of Work and School: Education and the Changing Workplace" (Thomas R. Bailey); "The Power of Curriculum Integration: Its Relationship to Other Reforms" (Erika Nielsen Andrew, W. Norton Grubb); "A Continuum of Approaches to Curriculum Integration" (W. Norton Grubb); "The Career Academies" (Marilyn Raby); "Coherence for All Students: High Schools with Career Clusters and Majors" (W. Norton Grubb); "Urban Career Magnet High Schools" (Ruth H. Katz et al.); "Senior Projects: Flexible Opportunities for Integration" (Mayo Tsuzuki); "The Voices of Students at Magnet Schools" (Amy Heebner); "Teaching Generic Skills" (Cathy Stasz, Kimberly Ramsey, Rick Eden); "Apprenticeship as a Paradigm of Learning" (Sue E. Berryman); and "The Promises of Curriculum Integration" (W. Norton Grubb). (Contains 193 references.) (MN)
FORMAT: Book, 246 pp., $21.95

SERIES: **Education through Occupations in American High Schools**
TITLE: ***Volume II: The Challenges of Implementing Curriculum Integration***
YEAR: 1995
AUTHOR: Grubb, W. Norton, ed.
AVALIABILITY: Teachers College Press, 1234 Amsterdam Avenue, New York, NY 10027, (800) 575-6566
ABSTRACT: This book contains the following papers examining the challenges of integrating high-school vocational and academic curricula to provide education through occupations: "Components of a Complex Reform" (W. Norton Grubb); "Integrating Vocational and Academic Education: Lessons from Early Innovators" (Kimberly Ramsey et al.); "Improving High Schools for Career-Bound Youth: Reform through a Multistate Network" (Gene Bottoms, Alice Presson); "Traditions of High School Teaching and the Transformation of Work Education" (Judith Warren Little); "The Roles of Teachers" (B. June Schmidt, Curtis R. Finch, Susan L. Faulkner); "The Roles of Administrators" (John R. Porter, Jr.); "Paths Not Taken: Curriculum Integration and the Political and Moral Purposes of Schooling" (Ken Koziol, W. Norton Grubb); "Guidance and Counseling: An Essential Component for Effective Integration" (Belinda McCharen); "Addressing Diversity in the Classroom" (Carolyn Maddy-Bernstein, Maureen Coyle-Williams); "Role of Employers: The Integration of Work-Based Learning" (Richard Kazis, Susan Goldberger); "Linking High Schools to Postsecondary Institutions: The Role of Tech Prep" (Debra D. Bragg); "Performance Measures and Standards: Implications for Evaluating Program Improvements" (E. Gareth Hoachlander); and "Achieving the Promise of Curriculum Integration" (W. Norton Grubb). An appendix titled "Resources for Further Information and Technical Assistance" (Susan L. Faulkner et al.) presents descriptions and addresses of 21 organizations and publishers of 5 newsletters concerned with integrating academic and vocational education. (Contains 280 references). (MN)
FORMAT: Book, 282 pp., $23.95

TITLE: ***A Guide for Curriculum Integration of Academic and Vocational/ Technical Education: Why? How?***

YEAR: 1995

DEVELOPER: North Carolina State Department

AVAILABILITY: ERIC Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Suite 100, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400

ABSTRACT: School reform increasingly requires curriculum integration of academic and vocational-technical education. The first part of this guidebook presents views held by 17 North Carolina teachers in support of an integrated curriculum at the middle- and high-school levels. Part 2 provides examples of parallel academic and vocational curricula for the following areas: language arts and computer technology; communication skills and business education; and mathematics, science, social studies, and visual arts paired with various vocational-technical courses. The third part offers sample lesson plans for the following courses: language arts and career exploration, science and home economics, communication skills and business education, mathematics and agriculture, mathematics and carpentry, science and agriculture, and social studies and marketing. (LMI)

FORMAT: Guide, 90 pp., $3.97 (order no. ED384126)

TITLE: ***Helping Teachers to Understand Their Roles in Integrating Vocational and Academic Education: A Practitioner's Guide***

YEAR: 1992

AUTHOR: Schmidt, B. June; and Others

AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652

ABSTRACT: This guide is designed to help the educational practitioner understand more fully how teachers fulfill their roles in integrating vocational and academic education. A description is provided of the field study during which more than 100 teachers, counselors, principals, and administrators were interviewed at 10 school sites using the Behavioral Event Interview (BEI) to explore behaviors, thoughts, and feelings of particular events both when teachers were effective in integrating vocational and academic education as well as when the interviewee would have changed what had been done. It discusses how a write-up was prepared for each event and information from write-ups was analyzed and grouped according to major themes and subthemes. The major section of the guide contains discussion and summary statements related to teachers' roles in integration drawn from the write-up analyses. Roles are described from the perspective of four major themes: faculty cooperation, curriculum development, instructional strategies, and administrative practices and procedures. The comments within each theme, arranged by subthemes, provide an easily accessible reference for educational practitioners in various stages of implementing integration; characterize roles that academic and vocational teachers must fulfill to achieve the integration successfully; and link the roles of teachers with administrators' practices needed to support these roles. A final section summarizes the stages of integration within the three themes and teachers' roles within those stages. (YLB)

FORMAT: Guide, 31 pp., $2 (order no. MDS-276)

TITLE: ***Home Economics Curriculum Integration Project***

YEAR: 1994

DEVELOPER: Pasco County District School Board

SPONSOR: Florida Department of Education

AVAILABILITY: Florida Department of Education, Division of Applied Technology, Adult, and Community Education, Bureau of Career Development and Educational Improvement, Florida Education Center, Tallahassee, FL 32399-0400, (904) 488-0400 or in Florida (800) 342-9271

ABSTRACT: This manual, which is intended for use in high school classrooms throughout Florida, contains home economics learning activities featur-

ing three different levels of integration of vocational and academic education. At level 1, activities teaching child development and homemaking skills are provided. These activities are structured to be taught within the confines of single classrooms by teachers integrating strategies reinforcing personal and occupational relevance and the basics of reading, writing, arithmetic, speaking, and listening into the curriculum. The level 2 child development and homemaking skills activities provided are to be taught by pairs of vocational and academic teachers who jointly plan and deliver instruction in a manner emphasizing the connectedness of academic and vocational education. The level 3 activities, which also deal with child development and homemaking skills, build on projects and themes to integrate and apply learning from multiple disciplines or subject areas. Each activity is presented on an activity sheet containing some or all of the following: theme/concept/topic; intended course; intended grade(s); objective(s); career/life connection; suggested instructional activities; method(s) of evaluation; required materials/resources; and name of the activity's developer(s). Also included are selected materials from a home economics curriculum integration workshop. (MN)

FORMAT: Manual, 333 pp., free (order no. HE 335)

TITLE: ***Integrating Academic and Vocational Education: Guidelines for Secondary School Principals***

YEAR: 1992

AUTHOR: Schmidt, B. June; and Others

AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652

ABSTRACT: These guidelines are for individuals and school divisions contemplating or already integrating academic and vocational education. Section 1 discusses two goals for integration. Section 2 provides a justification for integration and discusses the contradiction in the skills obtained in school and those needed in the workplace. Section 3 defines the integration of academic and vocational education in practical terms. Three aspects of integration are explored: as defined by the 1990 Perkins Act; based on the eight models defined by Grubb et al. (1991); and as related to Tech Prep. Section 4 identifies barriers to integration and lists suggestions for eliminating them. Section 5 discusses ways to encourage cooperative efforts between academic and vocational teachers. Section 6 focuses on roles of key players: academic and vocational teachers, secondary school principals, secondary school counselors, and secondary school administrators and supervisory personnel. Section 7 discusses three aspects of the process for implementing integration: planning stages, marketing strategy, and strategies for policy change. Section 8 lists effective curricular and instructional strategies. References are listed at the end of each section. Section 9 contains a consolidated list of 20 references. Appendixes include 13 related references and transparency masters for use during staff inservice training and informational meetings with school administrators. (YLB)

FORMAT: Guide, 125 pp., $5.50 (order no. MDS-297)

TITLE: ***Integrating Basic Skills into Vocational Teacher Education Curricula: Book 4–Change in the Public School***

YEAR: 1992

AUTHOR: Love, Cathleen T.; Gloeckner, Gene W.

DEVELOPER: Colorado State University

AVAILABILITY: ERIC Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Suite 100, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400

ABSTRACT: This curriculum guide for vocational teacher education focuses on change in the public schools and, more specifically, on how to help teachers understand (1) the reform movement and (2) the interrelationship between the reform movement and the movement to integrate basic skills

into education. Introductory materials include a project overview, mission and goals of the curriculum, belief statements, curriculum format, information on preparation and time issues, definition of new basic skills, and a guide to lesson categories. This book contains four lessons: School Reform; Rules, Roles, and Relationships in Schools; Dynamics of Change; and Partnerships Involving the Community. Each lesson format is identical, and each category within a lesson has its own icon, for ease in locating the category in any lesson. Lesson categories are as follows: (1) perennial problem (for this curriculum, what should be done about integrating the new basic skills into vocational education?); (2) practical problem (action that can help address the perennial problem); (3) justification for lesson; (4) learner outcome; (5) instructor resources; (6) teaching strategy modeled; (7) lesson plan (content, new basic skills, process, application objectives); (8) teaching-learning interaction (introduction and steps to guide the teacher educator through the lesson); (9) debriefing strategies (options for summarizing the lesson); (10) evaluation options; and (11) individualized learning plan. Handouts are provided at the end of each lesson. An instructor resources section at the end of the book contains transparencies and handouts suitable for photocopying. (YLB)

FORMAT: Guide, 95 pp., $15.88 (order no. ED349401)

TITLE: ***Integrating Curricula with Multiple Intelligences: Teams, Themes, and Threads***

YEAR: 1995

AUTHOR: Fogarty, Robin; Stoeher, Judy

AVAILABILITY: AVA Product Sales, 1410 King Street, Alexandria, VA 22314, (800) 826-9972

ABSTRACT: This work shows how to integrate curricula by seeking common-sense connections across grad levels, across disciplines, and across the spectrum of human intelligences. By integrating curricula with multiple intelligences, according to the authors, the educator will create an environment that is natural, holistic, and relevant for students.

FORMAT: Book, 206 pp., $34.95; $38.95 for nonmembers

TITLE: ***Integrating Vocational and Academic Education: A Handbook Featuring Four Demonstration Sites Including Students from Special Populations***

YEAR: 1996

AVAILABILITY: Center on Education and Work, Publications Unit, University of Wisconsin-Madison, 964 Educational Sciences Building, 1025 W. Johnson Street, Madison, WI 53706-1796, (800) 446-0399

ABSTRACT: This handbook describes process and techniques for developing, implementing, and evaluating integrated vocational and academic programs. It highlights programs at the secondary level that include at-risk students, teen parents, students with limited English proficiency, minorities, and students with disabilities. Four demonstration sites are discussed.

FORMAT: Handbook, 267 pp., $39

TITLE: ***Integrating Vocational Skills and Math Competencies***

YEAR: 1994

AVAILABILITY: Instructional Materials Laboratory, University of Missouri-Columbia, 2316 Industrial Drive, Columbia, MO 65202, (800) 669-2465

ABSTRACT: A resource designed to help teachers identify math skills that students must master in order to complete vocational competencies in trade and industrial education courses. Matrices were developed using Core Competencies and Key Skills for Missouri Schools and vocational competency profiles in the following areas: carpentry; electronics, heating/air conditioning/refrigeration; automotive technology; auto collision technology; drafting; graphic arts; machines tooling; welding; and health services assistant.

FORMAT: Guide, 200 pp., $60 (order no. 65-7500-1)

TITLE: ***Making High Schools Work through Integration of Academic and Vocational Education***

YEAR: 1992

AUTHOR: Bottoms, Gene; and Others

AVAILABILITY: Southern Regional Education Board, Publication Orders Department, 592 Tenth Street, NW, Atlanta, GA 30318, (404) 875-9211

ABSTRACT: This book traces the High Schools That Work program from its inception and reports on practices that are helping schools effectively integrate academic and vocational education. Examples are included to illustrate what can be accomplished. Chapter 1 describes the program's goals, key practices, key conditions, and success. Chapter 2 shows how schools are proving it is possible to raise expectations if the curriculum is relevant, students feel they are respected, and teachers and administrators work together. Chapter 3 focuses on integrating high-level academic with vocational studies through use of applied learning methods. Chapter 4 discusses integrating academic content into vocational courses with design of a new vocational program as the ultimate goal. Chapter 5 describes characteristics of a team of vocational and nonvocational teachers and ways in which they work together. Chapter 6 focuses on developing a challenging double-purpose program of study that combines vocational and academic content to prepare students for future learning at work and in postsecondary education. Chapter 7 discusses roles and responsibilities of the guidance counselor, teachers, and parents in the guidance process. Chapter 8 describes areas in which teachers need extra help and the form that help should take. The final chapter discusses why schools need to change and benefits of change. Annotations of 10 resource organizations are appended. An index is provided. (YLB)

FORMAT: Book, 235 pp., $10.95 (order no. 92V01)

TITLE: ***Promising Practices in Florida: Integrating Academic and Vocational Education***

YEAR: 1996

AUTHOR: Jones, Betty, Comp.

DEVELOPER: Florida School-to-Work Clearinghouse

AVAILABILITY: Florida Department of Education, Division of Applied Technology, Adult, and Community Education, Bureau of Career Development and Educational Improvement, Florida Education Center, Tallahassee, FL 32399-0400, (904) 488-0400 or in Florida (800) 342-9271

ABSTRACT: This document is a compilation of 90 successful interdisciplinary projects and activities and integrated academic and vocational curriculum ideas implemented in Florida during the past 3 years. The activities and projects have been submitted by teachers and have not been officially evaluated or reviewed. Each description provides this information: school/district; contact person with address and telephone number; subject/program area(s); grade(s); description; instructional activities; materials and resources; and comments. Broad topic areas include the following: agriculture; algebra; U.S. government; U.S. history; art; automotive; biology; building construction; business education; accounting; computer applications; keyboarding; office technology; word processing; business law; business mathematics; carpentry; chemistry; child care; child development; computer literacy; construction trades; criminal justice; diversified cooperative training; drafting; drama; drivers education; dropout prevention; economics; electronics; English; applied communication; language arts; family and consumer sciences; foreign language; graphic arts; health occupations; history; home economics; journalism; marketing; masonry; mathematics; applied mathematics; music; personal fitness; physical education; physical science; physics; principles of technology; science; small engines; social studies; Spanish; technology; technology education; and television production. An index is provided. (YLB)

FORMAT: Guide, 102 pp., free (order no. GE 345)

TITLE: ***Toil and Trouble. Good Work, Smart Workers, and the Integration of Academic and Vocational Education. Counterpoints: Studies in the Postmodern Theory of Education, Vol. 7***
YEAR: 1995
AUTHOR: Kincheloe, Joe L.
AVAILABILITY: Peter Lang Publishing, 62 West 45th Street, 4th Floor, New York, NY 10036-4202, (212) 764-1471
ABSTRACT: In this book, the need to reform schools and integrate vocational and academic education is examined in the context of the political dynamics that connect schools and the economic system. Throughout the book's 12 chapters, it is argued that integrating academic and vocational education is a better way of educating students and alerting them to the complexities of the world and the nature of the physical, social, political, and economic reality confronting them. The first six chapters trace the fragmentation of schools and workplaces through an examination of the following: the rise and fall of the democratic vision of work education; changes in the workplace as a result of industrialization, Fordism, postindustrialism, and the technological advancement and social disintegration characterizing the 1980s; and debates over upskilling/deskilling of the workplace and intelligence at work and school. The second half of the book focuses on the following: how a critical work education helps all students deal with the loss of meaning characteristic of postmodern work, school, and life itself; characteristics of smart workers; ways of reforming schools that foster good work and produce smart workers; a curriculum theory of academic and vocational integration; and connecting work to the world. (Contains 277 references.) (MN)
FORMAT: Book, 359 pp., $29.95

Literature Review

TITLE: **"Integrating Academic and Vocational Education: A Review of the Literature, 1987–"**
YEAR: 1994
JOURNAL: *Journal of Vocational Education Research*
Vol. 19, No. 2, pp. 25–72
AUTHOR: Stasz, Cathleen; and Others
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: A literature review suggests that occupational high schools and career academies can raise academic achievement, reduce dropout, and instill career aspirations. Integration is complicated by a web of policies and practices and negative images of vocational education. More attention should be paid to postsecondary integration. (JOW)

Model Programs

TITLE: **"An Academic/Vocational Curriculum Partnership: Home Economics and Science"**
YEAR: 1993
AUTHOR: Smith, Frances M.; Hausafus, Cheryl O.
JOURNAL: *Middle School Journal*
Vol. 24, No. 5 (May), pp. 48–51
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Proposes middle-school curriculum integrating two diverse disciplines (home economics and science), incorporates social issues, and deals with fundamental concerns of young adolescents. Three major areas are included in framework: food additives for appeal, science of textile fibers, and chemistry of household cleaning. All should be taught by teams of science and home-economics teachers to seventh- and eighth-grade students. (MLH)

TITLE: **"Closing the Gap: SREB Program Blends Academic Standards, Vocational Courses"**
YEAR: 1992
AUTHOR: Bottoms, Gene
JOURNAL: *Vocational Education Journal* Vol. 67, No. 8 (November–December), pp. 26–27, 70
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Southern Regional Education Board's State Vocational Education Consortium developed a model for integrating vocational and academic education that includes at least three credits each in math and science; four English courses; and four credits in a vocational major and two in related fields. Eight sites implementing the model have narrowed the gap between achievement scores of 1988 and 1990 students. (SK)

TITLE: **"The Dynamic Academy System for Larger High Schools: An Example Application"**
YEAR: 1996
AUTHOR: Weeks, Christopher
AVAILABILITY: ERIC Document Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Suite 110, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400
ABSTRACT: This document presents the basics of the career academy, a method of integrating vocational with academic educational systems and of providing a contextually valid education. The first section outlines the problems that the academy systems attempt to address, the four major principles essential for the success of career academies, and the nine major defining components used by all career academies. The second section describes the dynamic academy system, a system in which students from the 7th through 12th grades generally participate in two successive academies. Academy focus areas, the dynamism of the system, and what is done during those five years are discussed. The remainder of the document outlines a specific example of how the dynamic academy might be implemented. It presents, in a hierarchical format, a description of the academy example, beginning with the broad overview and successively narrowing the focus until the lessons in one unit of one class are detailed. The example given is that of an academy preparing students for a variety of careers using the World Wide Web. These sections follow: general academy information; specific academy example; information on courses and units; example course information; unit information for the course, Resources for Continued Learning; and description of the seven lessons in the Producers and Suppliers unit of the course. (YLB)
FORMAT: Report, 29 pp., $7.94 (order no. ED394034)

TITLE: **Education and Work: Toward an Integrated Curriculum Framework**
YEAR: 1996
AUTHOR: Prescott, Carolyn A.
AVAILABILITY: CORD Communications Inc., Attn: Customer Relations, P.O. Box 21206, Waco, TX 76702-1206, (800) 231-3015
ABSTRACT: This report describes the Integrated System for Workforce Education curricula project. The main goal of this project is to integrate academic and vocational education in a curriculum framework to fit the needs of schools. The roles of standards, career clusters, and assessment are all examined.
FORMAT: Report, 23 pp., free

TITLE: **"History Standards and Culture Wars"**
YEAR: 1995
AUTHOR: Nash, Gary B.; Dunn, Ross E.
JOURNAL: *Social Education* Vol. 59, No.1 (January), pp. 5–7
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Reports on the controversy about the National History Standards, released in 1994 as part of the Goals 2000 program. Argues that the standards encourage critical-thinking skills, active learning, use of primary sources, and integration of art and literature into history. (CFR)

TITLE: **"Implementing the Technology Preparation (Tech Prep) Curriculum"**
YEAR: 1995
AUTHOR: Anderson, Lowell D.
JOURNAL: *Journal of Technology Studies* Vol. 21, No. 1 (Winter–Spring), pp. 48–58
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Tech Prep programs are built on the premise that youth must become involved in the development of a technological society. Several models for integrating Tech Prep with academic education hold promise. (JOW)

TITLE: **"Integrated Elementary Technology Education"**
YEAR: 1995
AUTHOR: Ortega, Carol-Ann; Ortega, Richard
JOURNAL: *Technology Teacher* Vol. 54, No. 5 (February), pp. 11–15
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Describes how incorporating technology education into the existing elementary curriculum is placing education in the context of the real world. Suggests how to integrate technology education into the primary classroom most effectively. (JOW)

TITLE: **"An Integrated Programme from the Students' Perspective: The Bronte Creek Project"**
YEAR: 1995
AUTHOR: Jupp, Jennifer
JOURNAL: *Pathways: The Ontario Journal of Outdoor Education* Vol. 7, No. 4 (June), pp. 19–23
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Students who participated in the Bronte Creek Project, an integrated outdoor education program in Ontario that involves 11th-grade students in outdoor experiences and leadership opportunities, found the program to be authentic, felt empowered as a result of the program, became more responsible, and reported improved personal relations. (LP)

TITLE: **Integrating Academic and Vocational Education: Lessons from Eight Early Innovators**
YEAR: 1992
AUTHOR: Bodilly, Susan; and Others
AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652
ABSTRACT: An examination of academic-vocational integration in school settings began with a literature review to describe theoretical support for integration. Four themes were synthesized that defined integration as a reform: richer, more coherent curricula; more activity-based pedagogy; more teacher collaboration and coordination; and more attention to school transition. The integration efforts of eight schools in five states (California, Kentucky, Ohio, Oregon, Virginia) in the context of their background characteristics and their policy environment were analyzed through case studies. Approaches fell into three groups: enhanced academics, enhanced relevance, and enhanced engagement. The sites attempted to reform curricula and implement pedagogical reforms. Teacher collaboration reforms included teaming of academic and vocational teachers, joint time together for teams, and new organizational structures that empowered teachers. School transition reforms included use of planning partners for the school, transition-specific curricula, and credentials and certification. All sites reported major barriers to curricular and pedagogical reforms. States generally provided no support for increased teacher collaboration. The following conclusions about integration were reached: it could apply to all types of high schools; it was best approached as a school improvement effort; it took years to implement; it flourished in a conducive regulatory environment; it required capacity-building investments; and it promoted rethinking of educational conventions. (Appendixes include synopses of case study sites and an 88-item bibliography.) (YLB)
FORMAT: Report, 101 pp., $5.50 (order no. MDS-287)

TITLE: **Integrating Vocational and Academic Studies: What Three High Schools in Delaware Are Doing**
YEAR: 1995
AVAILABILITY: Southern Regional Education Board, 592 Tenth Street, NW, Atlanta, GA 30318-5790, (404) 875-9211
ABSTRACT: This report focuses on three Delaware schools that use the "project" approach to integrating academic and vocational studies. It contains forms used by the three schools in implementing the project.
FORMAT: Report, 48 pp., $2.50

TITLE: **"Integration of Secondary Mathematics and Science Methods Courses: A Model"**
YEAR: 1995
AUTHOR: Haigh, William; Rehfeld, Dwayne
JOURNAL: *School Science and Mathematics* Vol. 95, No. 5 (May), pp. 240–47
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Describes an integrated methods course in a small university, including evolution of the course, topics covered, descriptions of student assignments and activities, procedures used in student evaluation, and student opinions of the integrated course. An appendix contains the outline of topics and student activities. (15 references) (Author/MKR)

TITLE: **Key Issues in Vocational Education: Tip Sheet for Education Writers**
YEAR: 1992
AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652
ABSTRACT: This tip sheet provides information on key educational reform issues and advises education writers on covering vocational education. Part One, Key Educational Reform Issues Areas, addresses three issues: integrating academic and vocational education, Tech Prep, and performance standards and measures. Eight integration models are described: incorporating more academic content; combining academic and vocational teachers; making academic courses more vocationally relevant; curricular "alignment"; requiring a senior project; initiating an academy model; developing occupational high schools and magnet schools; and focusing on occupational clusters, career paths, and occupational majors. Other policies for course approval, funding, and teacher training are outlined that could be used to support academic and vocational integration. Seven types of Tech Prep programs are identified: traditional agreement, advanced placement, "two plus two," enhanced technical education, more information, nonduplication, and modified curriculum. Measures and standards are addressed in three broad categories: learning, labor market, and accessibility. Part Two, Covering Vocational Education, lists reading materials, suggests important issues and questions to ask, and presents information on NCRVE resources and ordering. (NLA)
FORMAT: Report, 17 pp., $2.50 (order no. MDS-035)

TITLE: **"1994 Outstanding Practices: Effective Strategies from, 'High Schools That Work' Sites and States in Raising the Achievement of Career-Bound High School Students"**
YEAR: 1994
AVAILABILITY: Southern Regional Education Board, Publication Order Department, 592 Tenth Street, NW, Atlanta, GA 30318-5790, (404) 875-9211, ext. 236
ABSTRACT: This publication contains descriptions of 35 outstanding practices from schools and states in the High Schools That Work (HSTW) Program. Each description is accompanied by one or more numerals corresponding to the 10 HSTW key practices listed in this booklet. The publication presents the outstanding practices gleaned from presentations at the annual HSTW staff development conference, technical assistance to HSTW sites, and recommendations from HSTW teachers, counselors, and administrators. Some of the practices described in the publication include

the following: principals playing a vital role in promoting schoolwide change; English teachers holding career-bound students to high standards; developing a writing skills program that helps students succeed; holding business education students to high standards in preparation for employment; integrating physics and vocational studies; using reading strategies to improve academic achievement in a principles of technology course; benchmarking mathematics and science curricula to world standards; science and vocational teachers developing a challenging physical science curriculum; applied communication course giving life to British literature; integration projects increasing students' learning and participation; integrating word processing and a foreign language; team-building strategies for integrating the curriculum; and comprehensive guidance program improving communication with students and parents. (KC)

FORMAT: Booklet, 36 pp., $1.50 (order no. 92V04)

TITLE: **"The Specialist: Hiring Full-Time Academic Teachers Has Sped Integration at This Oklahoma Vo-Tech School"**
YEAR: 1995
AUTHOR: Gaddis, Jana; Kline, Patsy
JOURNAL: *Vocational Education Journal* Vol. 70, No. 8 (November–December), pp. 25–27
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: In Oklahoma, specialists in mathematics and communications show vocational teachers how to emphasize academic content within their technical area. The program maintains a balance between theoretical and practical teaching so that graduates are prepared for the working world.

TITLE: **"Standing Together"**
YEAR: 1996
AUTHOR: Vo, Choung-Dai Hong
JOURNAL: *Vocational Education Journal* Vol. 71, No. 1 (January), pp. 38–40
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Discusses the consolidation of three high schools into the vocational-technical center in Rockbridge County, Virginia. Describes the implementation of new programs and the integration of vocational and academic courses.

TITLE: **"Success by Design—The Restructuring of a Vo-Tech Center"**
YEAR: 1995
AUTHOR: Bamford, Paul J.
JOURNAL: *Tech Directions* Vol. 54, No. 7 (February), pp. 15–17
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Describes how a vocational-technical center in a poor county in Michigan was transformed with an integrated program that ensures four provisions for all learners: (1) involvement in applying academic skills with occupational skills; (2) expanded opportunities to develop employability skills; (3) linkages with business, industry, and community colleges; and (4) career guidance. (JOW)

TITLE: **"The TAMARACK Program"**
YEAR: 1995
AUTHOR: Patterson, Bill
JOURNAL: *Green Teacher* No. 42, (February–March), pp. 25–27
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Describes the TAMARACK program of 4 courses offered as an integrated package to 20 students at the grade 11 and 12 levels at Mackenzie High School in Deep River, Ontario. Field trips, extended outdoor environmental education activities, and community activities take place without interfering with other programs in the school. (LZ)

TITLE: **"Teacher Feature: Real Life Examples of Integrating Academic Skills in Vocational Education"**
YEAR: 1992
AUTHOR: Penkowsky, Lisa B.

JOURNAL: *Journal for Vocational Special Needs Education*
Vol. 14, Nos. 2–3 (Winter–Spring), pp. 66–69
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Describes three programs successfully integrating vocational and academic education: (1) Dauphin County Technical School (Pennsylvania), which uses the cluster concept; (2) St. Mary's (Maryland) Technical Center's Tech Prep program; and (3) Frederick Vocational-Technical Center (Maryland), which offers core course mastery and a systems approach to integration. (SK)

TITLE: **"Technology as a Tool for Learning in an Integrated Academic and Vocational Program"**
YEAR: 1995
JOURNAL: *Technology Teacher*
Vol. 54, No. 7 (April), pp. 23–28
AUTHOR: Olds, Alan; Lightner, Richard
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Describes the technology education program at a Colorado high school that is based on principles of interdisciplinary education, cooperative learning, a flexible curriculum, and an emphasis on students as problem solvers. (Author/JOW)

TITLE: **"This Time, Physics and Chemistry: Maryland Welding and Science Instructors Take Integration Project a Step Further"**
YEAR: 1994
AUTHOR: Martinez, Reynaldo L., Jr.; Badeaux, Alan
JOURNAL: *Vocational Education Journal*
Vol. 69, No. 4 (April), pp. 30–31
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: In a Maryland high school, physics and chemistry principles are integrated into welding and metals projects, enabling students to work on academic assignments and experiments simultaneously.

TITLE: **"Whales and Hermit Crabs: Integrated Programming and Science"**
YEAR: 1995
AUTHOR: Kataoka, Joy C.; Lock, Robin
JOURNAL: *TEACHING Exceptional Children*
Vol. 27, No. 4 (Summer), pp. 17–21
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: This article describes an integrated program in marine biology. The program was implemented in a nongraded inclusive setting with second- to fourth-grade students whose abilities ranged from gifted to learning disabled. The program integrated science, art, music, language arts, and research and computer skills. (DB)

Reports

TITLE: **"Case by Case: NCRVE Research May Help Teachers Prepare for the Monumental Challenges of Curriculum Integration"**
YEAR: 1995
JOURNAL: *Vocational Education Journal*
Vol. 70, No. 2 (February), pp. 34–36
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Interviews with 109 individuals gathered data about specific events teachers experienced as they implemented integration projects. Findings indicated that teachers experience three stages of growth: (1) learning about each other; (2) curriculum strategies; and (3) instructional strategies.

TITLE: **"Cooperative Vocational Education in the Urban School: Toward a Systems Approach"**
YEAR: 1995
JOURNAL: *Education and Urban Society*
Vol. 27, No. 3, pp. 328–52
AUTHOR: Stone, James R., III
AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652

ABSTRACT: This report discusses concrete strategies to improve such areas as the selection of students, the development of employers into genuine training sponsors, and the evaluation of student's co-op work. Factors considered include a range of possible workplaces, the community-building workplace, and the capacity-building workplace. The author synthesizes existing federal legislation into a double integration model that calls for both the integration of vocational and academic learning, and the integration of school-based and work-based learning.

FORMAT: Report, 24 pp., $2.50 (order no. MDS-1041)

TITLE: **"Curriculum Integration: An Expanded View of an Abused Idea"**

YEAR: 1995

AUTHOR: Martin-Kniep, Giselle O.; and Others

JOURNAL: *Journal of Curriculum and Supervision* Vol. 10, No. 3 (Spring), pp. 227–49

AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360

ABSTRACT: Explores how practitioners might evaluate the merits of various curriculum integration formats. Provides a rationale, followed by an outline of prominent integration forms (interdisciplinary curriculum, integration around skills, and integration of students' experiences, internal life, and curricula) and criteria for establishing their merit. Describes criteria's use in a study evaluating curriculum integration efforts in New York City classrooms. (MLH)

TITLE: ***Integration of Vocational and Academic Education: Theory and Practice***

YEAR: 1992

AUTHOR: Plihal, Jane; and Others

AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652

ABSTRACT: Integration of vocational and academic education at the secondary level has been suggested as a way to strengthen students' education. Concerns about the vocational-academic split found in high schools center around human rights issues; economic competitiveness dependent on strengthened education; and graduates unprepared for life, work, or college. Curriculum theorists discuss three ways to organize a subject curriculum (correlated curriculum, fused curriculum, and broad fields curriculum) and two alternatives to the subject curriculum (core curriculum and activity curriculum). The literature indicates considerable activity directed toward integrating vocational and academic education. The most frequent type is the emphasis on basic academic skills in vocational courses. Three dimensions of the method for accomplishing the integration have been identified: content blend, teacher arrangement, and program of study. The scope of curriculum integration can be thought of in terms of breadth of exposure and exposure time. Motives for integration are the needs of society, teachers, students, and administration. Issues that require study are what should be integrated, who should benefit, what the desired outcome is, and how efforts should be evaluated. Three possible scenarios illustrate the potential breadth and depth of vocational and academic integration: vocational roles, vocational methods, and unabashed vocational emphasis. (Appendixes include 275 references for the paper, tables, and related literature and 2 integration models.) (YLB)

FORMAT: Report, 75 pp., $5.95 (order no. MDS-065)

TITLE: ***Making High Schools Work: Patterns of School Reform and the Integration of Vocational and Academic Education***

YEAR: 1992

AUTHOR: Andrew, Erika Nielsen; Grubb, W. Norton

AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652

ABSTRACT: A survey of various reform efforts was made to clarify the similarities

and differences between them and efforts to integrate vocational and academic education. The survey revealed four distinct approaches to school reforms: (1) teacher professionalization; (2) curricular and teaching reform; (3) schools of choice; and (4) restructuring. According to the results of the survey, the most ambitious efforts at vocational and academic integration are attempts to reconstruct the high school. Elements required for reform efforts to succeed include the following: vision and commitment, consistent support from administrators and state officials, new resources—especially for release time and time for teachers to be together during the day, sustained effort, teacher training, teacher support, and shared power. (The report includes a list of 200 references, a 33-item bibliography, and 3 appendixes that discuss the 8 models for integrating vocational and academic education, teacher professionalism, and curricular and teaching reform.) (KC)

FORMAT: Survey, 162 pp., $9 (order no. MDS-253)

TITLE: **"Modular Strategies for Overcoming Academic/Vocational Divisions: Issues Arising from the Scottish Experience. Government: State"**
YEAR: 1994
JOURNAL: *Journal of Education Policy* Vol. 9, No. 2 (April–June), pp. 141–54
AUTHOR: Raffe, David
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Discusses modular strategies for integrating academic and vocational education, such as those advocated in proposals for a unified system of postcompulsory education and training. Focuses on the "aggregative" strategy allowing students to combine academic and vocation modules in programs matching their individual needs and circumstances. Examines the Scottish postcompulsory system, which has certain characteristics of fully unified modular systems. (MLH)

TITLE: **"The New Vocationalism in Urban School Reform"**
YEAR: 1995
AUTHOR: Ramsey, Kimberly A.
JOURNAL: *Education and Urban Society* Vol. 27, No. 3 (May), pp. 260–73
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Discusses the environmental changes that are moving vocational education reform from the periphery to the center of general educational reform, emphasizing the mutual adaptive results between "organizational" reforms, such as theme schools, and "vocational" reforms, such as curricular integration. The author summarizes lessons for advancing vocational reforms in urban settings. (GR)

TITLE: **"The New Vocationalism: What It Is, What It Could Be"**
YEAR: 1996
AUTHOR: Grubb, W. Norton
JOURNAL: *Phi Delta Kappan* Vol. 77, No. 8 (April), pp. 538–46
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: A fifth strand of the "new vocationalism" is trying to align academic and vocational education by restructuring high schools to provide more consistent integration opportunities. These efforts take the form of career academies, clusters or career paths, and occupational high schools or magnet schools. Active, student-centered pedagogies seem most promising.

TITLE: ***Preparing Teachers to Successfully Integrate Vocational and Academic Education: A Case Study Approach***
YEAR: 1995
AUTHOR: Schmidt, B. June; and Others
AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652
ABSTRACT: This document, which is designed to prepare teachers and administrators to integrate vocational and academic education successfully, contains 46

case studies illustrating the roles teachers must assume to facilitate such integration. The cases, which have been drawn from a 1992 study titled "Teachers' Roles in the Integration of Vocational and Academic Education" (B. June Schmidt et al.), are grouped by four functional themes: cooperative efforts; curriculum strategies; instructional strategies; and administrative practices and procedures. Also included are an introductory discussion of the importance of integrating vocational and academic education, a list of purposes the cases can serve, and guidelines for selecting appropriate cases and managing the instructional setting. The following are among the titles of the case studies included: "Teachers Teaching Students"; "Coordination Gone Awry"; "The Applied Approach Makes All the Difference"; "Sharing with Parents"; "Teaming to Develop a Textbook"; "Hands-On Experience Versus Class Attendance"; "Making Math More Relevant"; "The Student Does the Teaching"; "Letter Writing in the Auto Mechanics Lab"; "The Community Can Be a Valuable Resource"; "Dealing with the Skeptics"; "Team Teaching"; and "Organizing for Teacher Cooperation." Appended are a 12-item bibliography and a chart detailing the type of school(s), teaching areas, and cooperative efforts illustrated in each case study. (MN)

FORMAT: Report, 144 pp., $12.50 (order no. MDS-780)

TITLE: ***A Time to Every Purpose: Integrating Occupational and Academic Education in Community Colleges and Technical Institutes***

YEAR: 1992

AUTHOR: Grubb, W. Norton; Kraskouskas, Eileen

AVAILABILITY: NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455, (800) 637-7652

ABSTRACT: Given recent federal government and business community emphasis on integrated vocational and academic education, a telephone survey of community colleges was made to explore what forms such integration is taking. Information was gathered through telephone contact with 45 community college officials recruited through a mailed questionnaire to a randomly selected sample of 295 community colleges and institutes and 4 site visits. The results indicated a variety of approaches to integrating occupational education; these were summarized as eight models: (1) general education requirements; (2) applied academic courses; (3) cross-curricular efforts—incorporating academic skills in occupational programs; (4) incorporating academic modules in expanded occupational courses; (5) multidisciplinary courses combining academic perspectives and occupational concerns; (6) tandem and cluster courses and learning communities; (7) colleges-within-colleges; and (8) remediation and English-as-a-Second-Language (ESL) programs with an occupational focus. Barriers to integration included disciplinary specialization, the status difference between occupational and academic instructors, lack of leadership for curriculum reform, and independent divisions in colleges. However, benefits were also cited, such as increasing student competencies and integrating the faculty. (Contains 69 references.) (KC)

FORMAT: Report, 66 pp., $3 (order no. MDS-251)

Studies

TITLE: **"Implementing Vocational/Academic Integration in Disparate School Settings"**

YEAR: 1994

AUTHOR: Roegge, Chris

JOURNAL *Journal of Vocational and Technical Education* Vol. 10, No. 2 (Spring), pp. 15–22

AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360

ABSTRACT: A study examined vocational/academic integration (VAI) in four Illinois secondary sites, assuming that why schools or teachers choose to integrate will affect how they go about it. The case studies revealed

the process of VAI in two different lights: as a highly formalized, documented, and administered procedure; and as an informal collection of individual activities.

TITLE: ***Integration of Academic and Career Learning: Literature Review***
YEAR: 1994
AUTHOR: Adler, Laurel; Cragin, John
DEVELOPER: East San Gabriel Valley Regional Occupational Program
AVAILABILITY: ERIC Document Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400
ABSTRACT: A study examined the need to include business-education partnerships in the integration of academic and vocational learning programs. First, literature dealing with the following topics was reviewed: the new economy, education and the economy, academic and vocational integration, the need for partnerships, and the history of business-education partnerships. The second part of the study focused on the operation and outcomes of the Los Angeles Area Business/Education Partnership Cooperative, which consists of seven school districts, three community colleges, four universities, more than 300 businesses, and more than 40 public and nonprofit community service agencies. The contribution of each of the following partnership components to the cooperative's success was examined: early identification and accessible ongoing monitoring and support services; encouragement of parental involvement; use of an adaptive curriculum and a combination of instructional approaches; cooperation with business and industry; use of a decentralized, multisite format; an open-entry enrollment policy; cooperative liaisons with businesses, colleges, universities, and high schools; provision of academic and vocational instruction tied to students' personal career goals and job training; and liaison with community service agencies. (Contains a 180-item bibliography on integrating academic and vocational learning.) (MN)
FORMAT: Study, 45 pp., $7.94 (order no. ED377322)

TITLE: ***Linking Learning with Earning: A Report of the Commission on Vocational Education and Career Opportunities***
YEAR: 1992
AVAILABILITY: ERIC Document Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Suite 110, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400
ABSTRACT: The Commission on Vocational Education and Career Opportunities in the District of Columbia Public Schools (DCPS) studied vocational education and career preparation activities in the DCPS and explored strategies for improving them. The study established that DCPS is failing to fulfill its career preparation mission. The problems of too many dropouts, inadequate skill development, and unsystematic career planning were deemed particularly unacceptable. Problems plaguing the DCPS career preparation program were identified at all levels from elementary through postsecondary. The following 15 recommendations for reforming the DCPS career preparation program by integrating academic and vocational education were formulated: increase total units required for graduation, set course achievement standards, require mastery of more advanced academic skills, require a computer literacy course, require a four-course major, form stronger linkages to post-secondary training, make contextual and cooperative learning priority topics for teacher training, increase teacher exposure to the applied uses of knowledge, improve linkages to the world of work and employers, address low student performance through expanded developmentally oriented remediation, require a career exploration course, systematize and expand career guidance, expand counselor training, and strengthen career information flows via interagency relationships. (Appended is a list of

consultants/liaisons assisting in commission.) (MN)

FORMAT: Study, 60 pp., $11.91 (order no. ED364699)

TITLE: ***The Perceptions of High School Principals toward Integrating Vocational Education into the Academic Curriculum in Mississippi***

YEAR: 1994

AUTHOR: Jones, Louise J.; Walls, John E., Jr.

AVAILABILITY: ERIC Document Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Suite 110, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400

ABSTRACT: A study determined the perceptions of 254 high school principals toward integrating vocational education into the academic curriculum in Mississippi. Responses to the Principal's Perception Survey were received from 147 principals (93% males, 75% white) for a 57.9 percent return rate. The results of the one-way analysis of variance and frequency distributions represented the principals' perceptions toward integrating vocational education into the academic curriculum. Results indicated a significant difference between perceptions toward integrating vocational education into the academic curriculum relative to gender ($p < 0.05$) and race ($p < 0.05$). White male high school principals' perceptions toward integrating vocational education into the academic curriculum represented a negative difference when compared to those of white female or black high school principals. No significant difference was found relative to highest degree held, salary, age, certification level, administrative experience, or type of school district. On the average, the principals believed that vocational education should be integrated into the academic curriculum, regardless of gender, race, highest degree held, salary level, total years of teaching and administrative experience, and type of school district. (Eleven data tables are provided. Contains 56 references.) (YLB)

FORMAT: Study, 39 pp., $7.94 (order no. ED382800)

TITLE: ***School to Work, Learning Outcomes, and Integrating Academic and Vocational Education***

YEAR: 1994

AUTHOR: Wichowski, Chester P.; and Others

AVAILABILITY: ERIC Document Reproduction Service, DynCorp I&ET, 7420 Fullerton Road, Suite 100, Springfield, VA 22153-2852, (800) 443-3742 or (703) 440-1400

ABSTRACT: Two major research and development initiatives have been undertaken at Temple University's Center for Vocational Education Professional Personnel Development. The first focused on student learning outcomes and delivery configurations relating to the integration of academic and vocational education. The second focused on building the capacity of local school districts to integrate academic and vocational education. The initiatives are helping school districts in Pennsylvania to address the challenge of providing all students with a high school education that will prepare them for high-skill, high-wage jobs or further education. The outcomes research had two components. Part one sought to determine what students must know and be able to do to graduate from high school, and part two explored delivery configurations as they relate to the integration of vocational and academic content. More than 1,800 educators and businesspeople in Pennsylvania provided responses to a questionnaire that asked for their opinion on 66 educational outcome statements. Analysis of the ratings showed strong support for outcome categories reflecting dependability, positive attitudes, basic skills, and occupationally specific skills. The study concluded that businesspersons and educators feel similarly about what students must accomplish to graduate from high school. These findings can help guide educational program planning. The second component of the outcomes research sought opinions about the organization of instructional content associated with the delivery of education to accomplish the 66 outcomes. A

survey was sent to 1,926 educators, with responses received from 1,089. The most popular educational configuration was equal vocational and academic education, with vocational education preferred for teaching technical skills. An instrument was developed to help secondary school staff members integrate vocational and academic education. (Ten tables and four figures are included in the report.) (KC)

FORMAT: Paper, 42 pp., $7.94 (order no. ED377360)

Videotapes

SERIES: **Integrating Vocational and Academic Education Videotape Set**

TITLE: ***Exploring Integration***
Planning Integrated Learning Approaches
Integrating Mathematics to Advance the Performance of Career-Bound Students

YEAR: 1996

AVAILABILITY: SREB (Southern Regional Education Board), 592 Tenth Street, NW, Atlanta, GA, 30318-5790, (404) 875-9211

ABSTRACT: This videotape set was developed for a High Schools That Work teleconference course, which explores effective school and classroom practices that engage students in completing challenging, authentic work. The videos feature school and community representatives who share the "how-to's" of getting started and working together to carry out integrating studies. Topics include the conditions for successful integration, organizational approaches, and teaching and assessment methods. Panels of experts and practitioners respond to questions from educators in a 25-state area.

FORMAT: Videotapes, 90 min., $400 (set of three)

TITLE: ***Integration of Vocational and Academic Learning***

YEAR: 1996

AVAILABILITY: Orange-Osceola-Valencia School-to-Work Partnership, Valencia Community College, P.O. Box 3028/190 South Orange Avenue, Orlando, FL 32802, (407) 299-5000, ext. 2623

ABSTRACT: This video features a landscape project that was a community-based activity enabling several different classes to participate. The drafting class came up with the design; the art class the visualization and finishing touches; the business class focused on building ordinances and codes, procedures, and permits; the math class made sure the supplies were sufficiently utilized; the English class obtained sponsors and donations; the marketing class made PSA's and created and distributed pamphlets; and the biology and agriculture classes tested the soil to see which plants would be best, what fertilizer was needed, and what irrigation and watering systems would be most beneficial.

FORMAT: Videotape, 4:07 min., free

Viewpoints

TITLE: **"Building Bridges: How Postsecondary Institutions Are Integrating Academic and Vocational Content"**

YEAR: 1993

JOURNAL: *Vocational Education Journal* Vol. 68, No. 2 (February), pp. 24–25, 50

AUTHOR: Grubb, W. Norton; Kraskouskas, Eileen

AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360

ABSTRACT: Approaches to integration include tandem/cluster courses, general education requirements, cross-curricular efforts, applied academics, academic modules in occupational courses, multidisciplinary courses, colleges within colleges, and remediation or English as a Second Language with an occupational focus. (SK)

TITLE: **"Counselors Tackle the New Basics: New Workplace Basics and Academic/Vocational Integration Change Counseling's Role"**

YEAR: 1992

AUTHOR: Feller, Rich; Daly, Joe
JOURNAL: *Vocational Education Journal* Vol. 67, No. 2 (February), pp. 24–25, 55
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Research into guidance efforts that successfully integrate basic skills into vocational education programs indicates that counselors play a key role in helping students gain the new basic skills. Their roles will have an impact on students and on the field of vocational education. (JOW)

TITLE: "**Integrating Curriculum for Tech Prep"**
YEAR: 1993
JOURNAL: *Tech Directions* Vol. 53, No. 4 (November), pp. 17–20
AUTHOR: Cahill, Jim
AVAILABILITY: UMI Article Clearinghouse, 300 N. Zeeb Road, Ann Arbor, MI 48106, (800) 248-0360
ABSTRACT: Institutional barriers that hinder the collaborative process must be removed for an integrated program such as tech prep to work. A foundation for program development is laid if teachers are made aware of the benefits of integration. (SK)

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http://vocserve.berkeley.edu

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